

Fig. 7.

SEPTIC DENTISTRY. See Editorial.

Fig. 8.



### "Che Passing of the Gold Foil Filling—A Prophesy."

By C. EDMUND KELLS, D.D.S., New Orleans.

"To escape criticism in this life one must walk the road of obscurity."—

Herbert Kaufman.

The fact that Drs. Young, Ottolengui and Gillett have filled some twenty pages of the ITEMS OF INTEREST in replying to my criticism (of six and a half pages), and that the subject was apparently of such importance that Dr. Ottolengui devoted one editorial to it, impels me to "close the discussion," as it were, and incidentally correct some errors into which the writers have fallen, for which Dr. Ottolengui has kindly offered me space.

Taking up these replies serially, I will reply first to Dr. Young (October Items of Interest).

Dr. Young has overlooked the fact, as the caption shows, that it was Dr. Ottolengui's editorial, "The Passing of the Gold Foil Filling—A Prophesy," to which I took exception in my original critique,

and that the criticism of his (Dr. Young's) paper was merely an incident. Had not the editorial in question appeared, there would have been no

161

# Ttems of Interest

occasion for my criticism, for certainly his paper would not have attracted any other than ordinary interest.

It is by discussions of this kind that new ideas are originated or brought to light, and thus progress is made by the participants in particular, and the profession in general, but all such discussions to be of real value must be based upon the sincerity of the writers.

Therefore when Dr. Young states, "Thus we learn that Dr. Kells occasionally makes inlays, and that each one fits perfectly," we recognize that the necessary attribute of sincerity is wanting in his reply, and therefore dismiss it without further consideration.

### Reply to Dr. Ottolenaui.

When I undertook to criticise the editorial in question, I fully realized what I was "up against," for we all know that almost any member of the dental profession would back Dr. Ottolengui to win

what would seem the losing side of any argument against any other member, with apparently everything in his favor. But in this case his enthusiasm had carried him so wide of the mark—at least that was my idea at the time, and still is—that I concluded to take my chances, and evidently my course was correct, for he now admits that he did not mean exactly what his words distinctly stated, and it may be questioned whether or not the predicted revolution has as yet greatly darkened the horizon. Kindly letters of encouragement, some from strangers from afar, have also been received with pleasure.

It is the discussion of a paper which usually brings out points, which, while perfectly clear to the writer, are sometimes more or less obscure to or misunderstood by the readers, and thus it is that such discussions are so valuable and should be encouraged.

So when Dr. Ottolengui says, "Dr. Kells has seemingly misapprehended some of the views expressed" (by Dr. Young), I now find that he is quite correct. I am free to confess that I did not realize that it was the ragged little sulci that Dr. Young insisted must be reproduced. I thought it was the occluding planes, or I would not have tendered my old crowns in evidence.

But all this, as before stated, was merely an incident. "The Passing of the Gold Foil Filling—A Prophesy," was the crux of the contention, so let us to it.

And now comes the defendant into court and admits that he did utter as true, "Time was when the gold used for filling of teeth was known as 'soft' foil," and later on as "non-cohesive gold" (November ITEMS OF INTEREST, page 384). "With the discovery of the cohesive quality of gold a revolution in filling methods was rapidly instituted"



(page 385). "Thus cohesive foil will be superseded by the inlay just as it took the place of soft foil." And now again he returns saying (page 813), "But I did not mean, and never have publicly expressed, the belief that gold foil should or ever will be abandoned."

It is possible, of course, at times to so phrase one's words as to render their real meaning and intent somewhat ambiguous, but where will one find any reader of the ITEMS OF INTEREST who will for a moment consider any ambiguity in the sentence," The Passing of the Gold Foil Filling—A Prophesy," more especially when a full editorial is occupied in explaining the reasons for its passing.

Webster defines Pass (Passing) to mean, "To disappear, to vanish, to die."

"Beauty is a charm, but soon the charm will pass."

The passing of a method, of a procedure, or of an operation, can have but one meaning—it disappears, it vanishes, it dies; it is no longer practiced.

There was a time when it would have been in order to say: "The Passing of Dr. John Allen's beautiful continuous gum work," "The passing of the practice of preparing cavities entirely by hand," and so on, for these methods have practically vanished, as Webster defines the word, and time may come when it will apply to the gold foil filling, but that certainly was not in May, 1913.

Webster also defines Prophesy as "a declaration of something to come, a prediction." Now take the true meaning of the word passing and add it to that of the word prophesy, and how can anyone other than Dr. Ottolengui figure it out to mean other than what it does?

However, if when Dr. Ottolengui wrote the caption, "The Passing of the Gold Foil Filling—A Prophesy," he did not mean it, and if the three pages of the editorial explaining fully why the gold foil filling would be abandoned, and reason for the "Prophesy" was not meant, and if the predicted revolution, dating from the day of the editorial, was not expected to occur, why then, of course, there is nothing for any of us to take exception to.

Density of East Pure Gold.

A minor point inadvertently brought in by me was considered of such importance as to warrant an entire editorial to its discussion, and that was the density of the cast pure gold filling.

It has never been perfectly clear to my mind why the specific gravity of a filling had anything to do with its value to the patient.

Dr. Ottolengui quotes from Dr. Black, giving the readings of seven test fillings, ranging from 17.4 to 19.42. Now it certainly is conceivable that the 17.4 filling might be perfectly adapted to the walls, and quite dense *upon its surface*, and thus be a better filling for the preservation of the tooth than the 19.42, which, while being more densely packed throughout, might be very imperfectly adapted to the walls.

### heat Creatment of Steel.

How little the specific gravity of a metal may affect its usefulness is shown by the fact that in the automobile industry certain steels are given the heat treatment. "Steel that originally had a useful

strength of sixty thousand pounds per square inch, and a toughness of ninety units, after this heat treatment had a useful strength of one hundred and seventy thousand pounds per square inch and a toughness of one hundred units, and during the process its specific gravity was lessened!" (Peerless Motor Car Co.)

So really, the specific gravity of a filling, within certain bounds, has nothing whatsoever to do with its value in the preservation of the tooth in which it is placed.

To soften gold to its most extreme point, one would naturally heat it or melt it and allow it to cool. The casting process brings out in the cast filling the extreme degree of malleability, of which pure gold is capable, no matter what may be its specific gravity. Pure gold thus reduced to its most malleable state is therefore not considered by many of the leading operators best suited for the restoration of large occlusal surfaces, be they inlaid fillings, crowns or bridges. These men originally used pure gold for this purpose, but after seeing it fail to stand the stress of use, owing to its extreme malleability, have replaced it with some form of alloyed gold possessing hardness to better resist attrition, and rigidity to better protect walls of cavities where these attributes seem especially desirable.

The editor is perfectly right when he says (page 887): "Let us not determine this upon the dogmatic allegation of any man." At the same time we must not lose sight of the fact that whatever *appears* to be the result of certain scientific investigations, each individual operator is the best judge of what *nets him* the most success.

Therefore, when many of our best-known and most successful operators with extensive practices, and therefore plenty of opportunity for observation, have discontinued the use of pure gold for the special uses cited, and have replaced it with a less malleable alloy, such action must carry considerable weight with the average man.



Reply to Dr. Gillett Ceeth in Old Hae. Dr. Gillett, after taking me to task for what I did not say, very courteously asks to be corrected if he did not "fairly interpret" my words. All of his criticism upon this topic—"teeth in old age"—seemed to be based upon his careless reading of

what I wrote. I did not say "it is my invariable policy to shorten the cusps of *all* bicuspids." Turn to page 737 and read, "Many a tooth that has been weakened by the loss of its pulp and deep-seated cavities may be saved from splitting by judiciously grinding down its cusps and those of its antagonist where such are *dangerously long*."



Fig. 1.



Fig. 2.

Now, as not all bicuspids I meet contain these three elements of weakness, that is, dead pulps, deep-seated cavities (such teeth with saddle fillings) and dangerously long cusps, it is readily seen that I do not "destroy the usefulness of all bicuspids I meet," as Dr. Gillett charges.

Moreover, as a matter of fact, I meet very few bicuspids containing these three elements of weakness, so I really shorten the cusps of but few teeth.

Again he should note that I distinctly said I "shortened" (ground down) these cusps, which does not mean that I grind the cusps away to such an extent as to destroy the usefulness of such teeth.

The very day following my reading of Dr. Gillett's paper, my first patient, a big, powerful man, presented with the condition shown in Fig. 1, and the very first thing I did for him, backed by years of experience and careful observation, and notwithstanding Dr. Gillett's ideas upon the subject, was to slightly shorten this weak cusp by grinding, the pulp being dead and the fillings large.

Teeth may be different in New Orleans from those in New York, as Dr. Gillett suggests, but physical laws are most certainly not, and it is

therefore most surprising that he falls into the error that such teeth are split by the "wedge-like action of the filling."

It is not the force of ordinary mastication on the filling that splits off these cusps, but it is the force exerted upon an unexpected hard particle—a shot in a piece of game, a pearl or small piece of shell in an oyster, a small fragment of chicken bone—caught at just the right angle upon the weakened cusp—which causes the damage.

Within the month I have met with one molar (quite recently inlaid by an expert dentist) and several bicuspids of the character described (containing the three elements of weakness) which lost their lingual walls in this manner. I may be wrong, but I verily believe that had those teeth been judiciously treated with a carborundum stone whose lingual walls would still be present and performing their duty, too. The last bicuspid so presenting had for its mate upon the other side of the jaw a tooth shown in Fig. 2, and I very promptly slightly shortened its lingual cusp, thereby lessening its chances of sharing the fate of its mate, and at the same time probably not destroying its usefulness to the extent of perceptibly affecting the forces!

And as long as my mind operates "within the past decade," which I trust will be at times to the end, I will continue this practice, experience having proven its value, knowing full well that I lose thereby the opportunity of extending my practice in the line of crown work greatly to the benefit of my patients.

When I said it is an indisputable fact that in most mouths there is a very decided deviation from the normal, I can assure Dr. Gillett that I really thought I was merely giving expression to a well-known fact, and to have him say that it is merely a "very erroneous personal opinion" is most amazing.

For us to meet (in our office) an adult with a full complement of thirty-two teeth, and all in normal occlusion, is so very unusual that it never occurred to me that it was not the same with other operators, and Dr. Gillett must admit that any deviation from the thirty-two teeth in perfect occlusion, not to say articulation, is a deviation from the normal.

I can but consider that Dr. Gillett is very wrong here but I am willing to be convinced of my error, and so if he will let me drop in some morning next October and "show me" normal occlusions in his patients, as they come in one after another during the day, I will readily admit my error.

Object of Dentistry. It certainly is astonishing how a man can run wild at times when enthused upon a subject.

When I said, "One of the principle objects of dentistry is to save teeth," he should at least have



given me the credit of taking into consideration the general well being of the patient.

To judiciously grind off a small portion of a single cusp or sometimes both cusps, just enough to lessen the amount of leverage, which might prove fatal, and thus save the tooth, does not in my opinion destroy its usefulness, and by no means renders such a tooth a "helpless paralytic" or "limping cripple," nor endows it with any other imaginary evils. It still remains a good, respectable member of the dental arch, and its owner is not even aware that it has deviated from the normal.

It is evident that, carefully worded as were these sentences, Dr. Gillett must have hastily read them or he could not have reached the conclusions recorded.

Twelve out of the thirty-two teeth have no occlusal surfaces upon which gold inlay enthusiasts can exploit their ability in large occlusal restorations, and thousands of these anterior teeth have been filled by soft gold workers of the past century, with fillings which have been invisible to the ordinary observer, tooth substance not having been needlessly sacrificed, and very many of which have stood for from twenty-five to forty years, and some much longer. Can you beat that?

His fanciful vagaries regarding "helpless cripples" and "limping paralytics" were but a waste of words.

Caries After Correction of Mal-occlusion.

I nowhere showed any desire to thrust upon the orthodontic work the onus of the thirteen large inlays; I simply emphasized the fact that correcting the irregularity had failed to prevent them. Of course I must admit the possibility of caries before,

during and after the orthodontic period which the first casts may not have shown.

However unfortunate was the original selection of the illustration in question, Dr. Gillett's explanation as to the reasons for these wholesale restorations certainly renders it much more so. The appearance of the finished work is not under consideration. It was the *necessity* for such work that is deplorable, and this becomes much more so after Dr. Gillett's latest explanation of the case.

The models shown in Figs. 24 and 25 certainly are from first-class impressions. Dr. Gillett must give Dr. Young credit for that, and there is not a cavity to be seen. For me to assume they were "free from caries" was certainly excusable, for anyone would naturally have supposed that an orthodontist would have seen to it that any incipient decay would have received such immediate attention that such wholesale devastation of the occlusal enamel surfaces could not become necessary.

Here, then, is the deplorable feature—unless those sulci and fissures in these thirteen teeth were different from all teeth I have ever seen—there must have been a time when this incipient decay could have been cut out in all their little spiderlike ramifications with a No. 1 or No. 2 bur and these grooves filled with amalgam probably—soft gold possibly—and these occlusal surfaces preserved in this manner for many a year.

Notwithstanding the fact that she was "always under careful observation," the work was not done at the right moment, nor at a time



Fig. 3.

when gold foil would probably have served best, and when at last it was undertaken, the restorations as shown were considered necessary by Dr. Gillett. Further comment is unnecessary.

Who has not seen in children "always under careful observation" bicuspids and molars just erupting through the gum with their enamel in their sulci not well formed, and these sulci cut out immediately with a No. 2 or No. 1 bur, filled with cement for the time being, and thus prevented from meeting the fate of this unfortunate young girl?

Ciny Inlavs. That it is only at this late day that Dr. Gillett has discovered that the filling of small cavities by the casting process is possible is surely a most astonishing confession, for others have known of it

almost since its introduction.

Several years ago, when the art was young, the writer sent the specimen shown in Fig. 3 to Dr. Johnson, with a short sketch of his process for making these tiny inlays. The sketch was published in the *Dental Review*, but not the illustration. All things which are possible are not always practical, and while once in a great while a combination of circumstances renders it advisable to use up an hour or several hours in the making and completion of a tiny inlay, as a rule it is most practical to complete the operation in a few moments by an old-time filling—



the kind that I have been contending from the first has not yet seen, and probably will not soon see, its "passing."

There is a man by the name of Emerson who is called "The High Priest of Efficiency," and of whom we have all read. I wonder how much below nothing he would rate the efficiency of any operator who would require several hours to inlay a few tiny cavities which he could fill with foil in a few minutes—that self-same old foil that is "best adapted to the saving of teeth!"

From the facts stated it may be concluded that while Dr. Ottolengui does not expect the "Prophesy of the Passing of the Gold Foil Filling" to come true, Dr. Gillett sincerely does, as shown by his saying that the operator of the future will inlay any cavity, "for old or young—occlusal and approximal."

Nearly everything that I have learned has been from or through the work of others, and so when upon occasion it falls to my lot to pass some word along, it certainly is a pleasure so to do.

It is therefore with intense satisfaction, tinged, however, with some regret, that I realize that I have been the accidental means of introducing into Dr. Gillett's practice such a radical change in his method of filling minute cavities—pleased only because he seems so enthused over it, not because I approve of the change, and with some regret because of the belief that the change will not be of benefit to his patients.

### Che Schoolmaster Abroad.

That many dentists have always run to "fads" is most deplorable. There are many yet living who still suffer from Dr. Arthur's disking process, though that was a short-lived fad of some forty years ago. We have quite recently passed through the copper

amalgam and cataphoresis fads. Then came the abuse of porcelain bridges and the craze for porcelain fillings where they were at least indicated. Now come those like Dr. Gillett, to inlay every cavity filled with gold, although many operators have already awakened to the fact that gold inlays are not going to be always satisfactory just because they are gold inlays.

The common people are doing a lot of thinking these days, and every dentist who did not see a certain article in the New Orleans papers of January 10, 1914, has missed something.\* Already the writer has had several families leave their dentists and come to him with the statement that they were tired of having their "teeth cut to pieces for gold"

<sup>\*</sup>See copy of newspaper clipping, appended.—En.

inlays which did not stay in." This very day a man—a recent arrival in New Orleans from a large Western city—spoke his mind upon the subject of gold inlays, at the time of making an appointment to have one reset (?)

Let us hope that the operator of the future will be best equipped to treat with judgment each individual tooth as its condition calls for. Gutta-percha and cement, copper amalgam and other alloys, the combination of tin-foil and gold foil, soft and cohesive gold foils, synthetic cements and porcelain, gold inlay in a class by itself—the ability to use each and everyone of these to its best advantage—that is the hope of the people who are in his hands.

Incidentally he should follow Dr. Young's ideas upon the restoration of occlusal surfaces, when that is practical.

It has long been known that New York City boasts of a "leisure class," and some of us have suspected that some of our dental friends might belong to it. Now that Dr. Gillett intends to inlay all cavities where gold is indicated, and Dr. Ottolengui takes out perfectly good amalgam fillings to be replaced by inlays, we may be sure that they at least will not belong to it in the future, whatever they may have done in the past.

[Clipping from New Orleans Daily Paper.]

#### "Let Me See Your Ceeth Before You Show Your References."

Said a business man recently to an applicant for employment:

"I won't buy imperfect machinery and I won't hire imperfect workers.

"I learned my lesson last year, and I am still suffering from a

\$5,000 toothache in my sales-manager's jaw.

"I sent him out after the biggest contract we ever had a chance to bid on. He caught cold in a bad tooth while on the train, and the next morning, when his brain ought to have been leaping like lightning, his jaw was jumping like thunder.

"He couldn't put his mind on my business. He was thinking about oil of cloves instead of lubricating oils; and a second-rate concern, rep-

resented by a healthy youngster, walked off with the order."

Many big corporations are adopting the common-sense policy of this man.

No matter how much character and ability an employee may possess, he is unreliable if he isn't in fit condition.

An inefficient body is a distinct handicap nowadays.

#### The Exposition of Big Ideas

will present a number of important truths to workers in every walk of life, not the least among which will be the relation of health to success.



It will demonstrate that a sound constitution is a necessary adjunct

to progress.

The time is rapidly approaching when merchants and manufacturers will seriously weigh the state of a man's teeth and digestion, as well as his shrewdness and dependability.

The reduction of health to a profit and loss basis is one of the

most insistent jobs with which the twentieth century has to deal.

A damaged human is no different from any other piece of damaged machinery. The Exposition of Big Ideas will show the newest ways to prevent and repair damaged health.

When you learn to devote as much attention to your body as a good

mechanic pays to his tools, your future is assured.

The physical efficiency exhibit of the Exposition will, in common with its many other departments, attract universal attention and produce

signal betterments for New Orleans.

Fill out the coupon below, put in a check mark opposite the department of the exposition in which you are most interested and mail it to the Bureau of Information, at Exposition headquarters Grunewald Hotel. You will never invest a two-cent stamp more profitably.

HERBERT KAUFMAN. (Copyright, 1914, by Herbert Kaufman.)





## Che Use of Interchangeable and Replaceable Ceeth in Crown and Bridgework.

By HART J. GOSLEE, B.S., D.D.S.

Because of the frequency with which porcelain teeth and facings which are attached to the supporting structure by means of soldering become fractured, either during the process of soldering or under the stress of mastication subsequently, the more or less general use of "replaceable" or "interchangeable" teeth which are attached by means of cementation only is rapidly becoming a standard practice, and one which is recognized as the safer and better procedure by those who are most expert in crown and bridgework. There is no question but that work so constructed possesses many advantages, chief among which are the decreased likelihood of breakage or fracture, and the facility with which repair or replacement may be effected in the event of such mishap.

The decreased likelihood of fracture, in the first place, is due to the fact that the porcelain teeth not being heated at all are naturally used in their strongest possible form; and, secondly, the influence of the expansion and shrinkage of the metals and solders used in the process of construction, which often accounts for fractured teeth and facings, is avoided; and, furthermore, when the attachment is made with cement the teeth are less likely to become fractured in the mouth because of being held less rigidly and of being better cushioned and protected.

For these reasons it is evident that this method of procedure must ultimately become a general practice.



In the use of replaceable or interchangeable teeth, their removal from the supporting structure after they have been cemented to place may frequently be desirable or become necessary for various reasons. Whenever this is indicated, any of the forms now used may be easily removed by placing the piece in nitric acid and allowing it to remain for several hours, or until the cement has been dissolved. This will permit of their ready detachment without injury to either porcelain or gold.

Also, in all cases where for any reason it may become necessary to subject the piece to the heat of soldering after the teeth have been cemented, each and every tooth should always be detached and recemented before mounting the case.

This procedure is absolutely necessary, because the heat of soldering will disintegrate the cement, and no matter how securely and firmly attached they may seem to be when the case is removed from the investment, it is but a question of time until the action of the mouth fluids upon the already disintegrated cement will cause them to become loosened or detached.

As a safe precaution, therefore, whether it be a new case in which some change has to be made before mounting, or an old one which is to be repaired, if it must be heated and soldered after the teeth have been cemented, then as soon as the soldering has been accomplished the piece should be placed in the acid bath and allowed to remain until each and every tooth may be removed, after which they should be recemented.

This applies to any of the various forms of replaceable porcelain teeth which are cemented to the supporting structure.

### Crowning a Fractured Root.

By Dr. W. A. Roberts, Newtown, Pa.

Recently the writer had presented a case where a Logan crown had been worn on an upper left central root. As in many such cases, the canal had been greatly enlarged to admit the crown pin, which had also been much shortened, creating a powerful leverage which finally resulted in fracturing the labial side of the root, the fracture involving half of the length of the root. Bridgework was out of the question for various reasons, so the following plan was evolved:

The loose piece of root was extracted, the canal carefully enlarged a sufficient distance to admit the entire length of a Davis crown pin.

In the palatal side of the root and parallel with the Davis Crown pin a hole was drilled large enough to admit a platinoid pin the thickness of a sewing pin and an eighth of an inch long. The small pin was placed in position and the crown pin, surrounded with a tapering mass of softened inlay wax, was forced to position. The excess wax was carefully molded over the exposed root surface, and included the exposed end of the small platinoid pin. The wax was carefully carved and removed, bringing with it both the crown pin and the small reinforceing pin. The wax model was cast and placed in the root, which it fit accurately and firmly. With the inlay in position a plaster impression was taken, and upon the resulting model a Davis crown was ground to fit the inlay and the parts then cemented to place.

### A Personal Experience with a Lower Denture.

By LOOMIS P. HASKELL, D.D.S., Chicago, Ill.

Personal experience on the part of the dentist is of value to the patient as well as a demonstration to the operator in difficult cases.

This is especially true in the case of lower dentures, when absorption has taken place to such extent that there is only a flat, narrow surface, so that the lingual muscles are attached to the margin of the jaw, and consequently the plate cannot extend below the margin except in some cases at extremities of the jaw. Otherwise the plate is constantly raised by movement of the tongue, and causes a clatter of the teeth so often complained of.

This has been the condition of my own jaw for twelve years. Placing my finger over the margin of the jaw, a little way at the corner of the mouth, holding it tight and raising the tongue, the finger is forcibly displaced. Thus can readily be seen what would be the result of extension of the plate lingually.

In this condition there is nothing to hold the plate in place, as adhesion is impossible. I have found, however, that a flange about one-quarter of an inch wide, extending from the first bicuspid to the posterior margin of the plate, is a great help, as the cheek falls over it and helps hold it in place. This flange must not be down at the margin, as it would be lifted by the muscles, but midway between the margin and necks of the teeth, and grooved a little.

It will take the patient some time to learn to use this. I always tell patients it is the lower plate that is liable to irritate the membrane, and if so, they cannot eat, but must come and have it relieved, but come



after having it in the mouth for a half day, so that the irritated spot can be seen. It is not always easy to locate the spot on the plate. This is easily done by painting a little moist whiting over the suspected spot and placing the plate in the mouth when the spot is indicated, and the trouble can easily be remedied with a small carborundum.

Years ago I made many cast metal plates. The second plate for myself I made in this manner. After having it in for a short time I leaned forward to talk with a student at the bench. As there was no lingual flange to hold it in place, it could not do otherwise than slide forward. I wore it to bed and it slid to my cheek. I have had no further use for weight in such cases.

In fact, my experience has demonstrated to my satisfaction that weight is not needed upon the lower jaw, and that vulcanite is just as good as anything upon the lower jaw, which is not true of the upper jaw.

Why there is such excessive absorption of the lower jaw I do not know, but the process disappears regardless of what is worn, or even when nothing is worn. This condition did not exist years ago. I think it may possibly be owing to the great increase of pyorrhea. I rarely have a case of a good ridge, as in former years.

In full dentures the anterior teeth should never quite meet; arrange for pressure on the bicuspids and first molars, leaving the second molars free.





# Some Observations on the Development of the Cemporo-Mandibular Articulation and Mandible, and their Relation to the Creatment of Distocclusion and Mandibular Retroversion.

By M. N. Federspiel, B.Sc., D.D.S., M.D.

Professor of Oral Surgery and Orthodontia Dental School, Marquette University, Milwaukee, Wis.

Read before the American Society of Orthodontists, Chicago, July, 1913.

I fully realize that I have taken up a subject for study and discussion that will demand much scientific investigation before the profession will be willing to accept my findings. Time, of course, will bring to light more, if my colleagues will assist in developing further knowledge pertaining to the pathological and physiological changes in the temporo-mandibular articulation.

At this time permit me to state that embryological literature pertaining to this area is not authentic. Writers seem to differ in their views—a fact which is also true of the mandible. Anyone who has attempted investigating the growing of the mandible and its joint soon realizes that it is a difficult matter to obtain specimens and far more difficult to make dissections for gross and microscopic study.

The modern treatment of the so-called distocclusion, or Class 2 (Angle), or, as I prefer to call it, mandibular retroversion, is by the use of intermaxillary force and lingual inclined planes. Results are usually satisfactory if these cases are treated during the period of tooth eruption. It is rarely possible to obtain permanent results in such cases if treated after the developmental period.



Clinical observation during the last ten years has wrought many changes in the treatment of malocclusion and dento-facial deformities. This is due no doubt to the fact that our knowledge of diagnosis has from time to time been modified, owing to the many complex cases that conflict with the preconceived notions of the orthodontist. It is probably admitted by the majority of specialists that orthodontic diagnosis, as it has been viewed in the past, gives little assurance of successful results in a large number of cases.

I do not wish to convey the idea that the thousands of cases treated in the past have not been benefited; but I have observed cases in my own practice, and many cases treated by eminent orthodontists, wherein the results showed a splendid correction at first, and in which after a few years there was a change from an ideal occlusion to a marked malocclusion. Especially is this true in cases diagnosed as distocclusion, or the so-called Class 2.

You will agree that cases in which patients show a distal relation of the lower teeth to the upper have been diagnosed as Class 2, or distocclusion. In other words, such an abnormal relation of the teeth meant that the maxillary arch was in a normal position in the upper jaw, and the mandibular arch was in an abnormal position in the lower jaw, a form of malocclusion known as arch malrelation.

I do not wish to imply that I fail to recognize the importance of normal tooth eruption. It is admitted by all scientists that the normal function of mastication plays an important part in the normal development of the maxillary bones. But I am convinced that many forms of malocclusion and dento-facial deformities are not primarily due to faulty tooth eruption, but to other conditions. This effect is a factor in causing abnormal eruption to be the outcome. In other words, I am more and more inclined to believe that the forces of normal eruption and the forces of normal occlusion are to a large extent regulated through glandular manifestations, which I will take up later, and also to the inequality of the muscular action, as well as to the unbalanced intra- and extra-maxillary pressure.

For a long time I believed that the upper first molar always erupted normally; that if the manibular molar was distal to normal the case should be diagnosed as Class 2 (Angle), or, as Lischer puts it, distocclusion: that to fulfill the highest aim in the treatment of orthodontic cases it is necessary to obtain a normal relation of the inclined planes when the jaws occlude; that the forces of normal occlusion are a factor in permitting the jaws and adjacent structure to develop along normal lines; that the growth of the mandible depends largely on normal eruption of all its teeth.



Let me call your attention here to the case of a young lady nineteen years old, a Jewess, who came to my clinic. She informed me that she had never had any lower diciduous teeth, and that at the age of twelve years the second mandibular molars erupted. The X-rays showed and there were no other teeth in the jaw. The upper arch contained two centrals, two laterals, one right diciduous cuspid, two bicuspids and two molars. (See Fig. 1.)

Upon inspection and palpation I found that the maxillary bones were well developed—the relation of the molars normal. Examina-

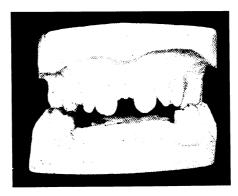


Fig. 1. Shows models of case where there were no deciduous teeth.

tion of nose showed nothing pathological, health excellent. What I wish to bring out is that, notwithstanding the failure to have a full set of teeth, the jaws had nevertheless developed to their full size. The question might be asked, "Would the jaws have developed or have been properly balanced had the young lady been a sufferer from pathologic conditions in the adjacent structure or elsewhere? Would any glandular manifestations or inequality of jaw muscles, etc., have permitted the jaws to develop as they did?"

Medical literature is replete with reports and variations in the development of the skeleton. Thus, for instance skeletons with eleven or with thirteen free ribs only are not uncommon. The form of the skeleton as a whole and of the individual bones which compose it depends partly upon heredity, partly upon the mechanical and chemical influences to which it is subject during growth of the individual. Abnormal stress of muscular or other origin, and abnormal lack of stress, as in the case of muscle paralysis, both give rise to bones and joints abnormal in form.



Hypoplasia, under development of the skeleton, may be due either to prenatal or postnatal conditions. This may be due to:

- (1) Lack of active proliferation or cartilage.
- (2) Inactivity in the process of ossification, membranous, subperiosteal or endochondral.
  - (3) A premature union of epiphyses with the main part of the bone.
- (4) Inflammation and other abnormal conditions affecting the growing parts of the bone.



Fig. 2a. Shows a condition wherein the mandible is in retroversion.

Fig. 2b. Shows same patient wherein the lower jaw was shifted mesially giving the patient a normal facial outline.

Usually in cases where there is underdevelopment of the skeleton the long bones are especially affected and appear short and thick. The pelvis and thorax usually small. The root of the nose is broad and frequently sunken in.

Hyperplasia, overgrowth of the bones, is due:

- (1) To an excessive activity of membraneous or subperiosteal ossification.
  - (2) To a prolonged activity of growing epiphyseal cartilages.

Hyperplasia may be local or general, and may give rise to a well-proportioned or disproportional enlargement of the skeleton. The causative factor

in bringing about variations in the position and shape of one or more bones is obscure. It is said that the removal of testicles early in infancy, or congenital absence of the testicles, may lead to excessive prolongation of the activity of the epiphyseal cartilages and hence to giganticism. Phosphorous and arsenic in small doses are said to promote bone growth. Irritative stimulus, such as a blow, and even a small center of inflammation (osteomyelitis, ostitis, etc.), may excite activity



Fig. 3. Mandibular macrognathia. Age 13 years.

in the processes concerned in ossification and induce abnormal growth in size of bone. Some diseases involving both the bones and certain glands have led to the belief that glandular condition is a factor in producing abnormal bone growth.

Modified Development of Maxillary Bones. While a deviation from the normal relation of teeth will modify the development in the maxillary bones, I am inclined to believe that that modification extends only to a limited area. Permit me to say, in other words, that malposition of the teeth

will bring about a deficient development of bone surrounding the teeth. This relates only to neutroclusion, or the so-called Class 1.

In arch malrelation known as distocclusion and mesiocclusion a different problem confronts us. In many of such cases it is not deficiency of bone, but rather a malposition of the mandible, or probably





Fig. 4. Note maxillary rather than the mandibular prognathism of the true acromegalic; also posterior position of the ears. (Cushing.)



Fig. 5. Left showing marked frontal protrusion, thick lips, etc., in profile. Right, patient in the act of showing teeth while jaws which meet only on the right are held closed. Note the deep furrows of the thickened cutaneous tissues. (Cushing.)

a deficiency or excessive development of the maxilla. If the mandible is fully developed and contains all of its teeth, and if upon inspection we find the lower arch distal to normal, may we not consider such a case a normal relation of the teeth to the jaw with a faulty occlusion, due to malposition of the jaws? (See Figs. 2a, 2b.) Or suppose we find upon inspection that the mandible is large and massive in size with its teeth anterior to normal, may we not incline to belief that the growth

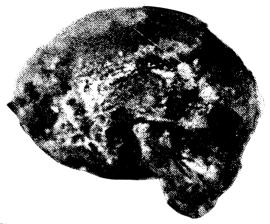


Fig. 6. Foetus at 7 months. Note temporo-mandibular joint.

of this bone is regulated by the same force that governs the osseous system? (See Fig. 3.)

Function of the Pituitary Body.

Evidence in medical statistics is fast accumulating to show that the pituitary body, which weighs only from five to ten grains, and is situated near the anterior part of the base of the brain, mysteriously

governs the shape, size and form of bone growth. (See Figs. 4, 5.)

Keith describes certain changes occurring in the jaws of man when associated with acromegaly. He states that the growth of the jaw bones is so co-ordinate that the upper and lower teeth fall into correct relation. He further says there are at least two factors concerned in this co-ordination.

- (1) A substance evidently derived from the pituitary body which acts on the osteoblasts so that they respond readily to certain stimuli.
- (2) Certain forces which act directly on the jaws. These stimuli arise from the forces of tooth eruption and from the forces of muscular activity, which act chiefly on the lower jaw.

This brings us to a discussion as outlined in the title of this paper.



Development of Cemporo-Mandibular Articulation. While much has been said relative to the development of the mandible, I find that the development of the temporo-mandibular articulation in regard to its formation is far from being understood.

Keibel and Mall, in their book on embryology, claim that this joint is developed between the membrane which covers



Fig. 7. Infant 2 months after birth. Note shallow glenoid fossa.

the condyle of the mandible and the periosteum of the squamosum. In loose tissue between the two a condensation marks the beginning of the differentiation of the "discus articularis." On each side of this "discus" a joint cavity develops. Each joint cavity is throughout life lined by fibrous tissue. Beneath the joint periosteum of the mandible and of the temporal bones a thin layer of cartilage is produced. According to Wallisch, in the new-born the tuberculum articularis is still underdeveloped and the condyle is flatter than in the adult. (See Figs. 6, 7.) The condyle reaches its definite form and the tuberculum is developed after the teeth appear.

Personally, I am of the opinion that the temporo-mandibular articulation develops in shape and depth during the period of tooth eruption. I am satisfied that its position, shape, size, etc., are influenced by the direct reaction of the muscles which control the mandible.



I have observed in the history of a number of cases of mandibular retroversion, that the patients, prior to the eruption of the permanent teeth, showed no signs of malocclusion. That after the child began to breath through the mouth instead of the nose the mandible slowly and gradually drifted distally and the upper anterior teeth began to protrude. (See Fig. 4.)

I have come to the conclusion that this change to malposition of the mandible, complicated by malposition of the teeth, is brought about by unbalanced muscular force. Nasal stenosis will, in time, influence the shape of the temporo-mandibular articulation and surrounding area, and if not corrected during the period of growth will render the prognosis unfavorable in correcting mandibular retroversion by orthodontic procedure.





### Local Anesthesia.

By THEODOR BLUM, D.D.S., M.D.

Oral Surgeon and Dental Radiographer to the New York Throat, Nose and Lung Hospital.

Read under the auspices of Sigma Epsilon Delta Fraternity, at the New York

College of Dentistry, January 22, 1914.

In a paper entitled, "The Kinetic Theory of Shock and Its Prevention Through Anoci-association (Shockless Operation)," Dr. George W. "The word anesthesia-meaning 'without feeling'-de-Crile says: scribes accurately the effect of inhalation anesthetics. Although no pain is felt in operations under inhalation anesthesia, the nerve impulses set up by surgical operation reach the brain." In this manner traumatic shock is caused; how can we prevent it? "On the kinetic theory. no shock could be produced by traumatizing a territory infiltrated with local anesthetics—a territory whose nerve connection with the brain has been broken by nerve blocking. . . . By blocking nerve connection, local anesthetics protect the brain from local operative injury, but they do not protect the brain against destructive psychic strain; inhalation anesthetics exclude the psychic stimulation of the brain cells, but do not exclude the operative stimulation; and anesthetics introduced hypodermically, being uncontrollable, are excluded on principle. Each anesthetic covers a part of the field, but there is no single agent that alone can produce anoci-association, which is the goal of operative surgery. We therefore do not advocate ether alone, nor chloroform alone, nor nitrous oxide alone; we do not advocate local anesthesia alone, nor morphine and scopolamine alone, nor spinal anesthesia alone, but through selection and combination of anesthetics we aim to attain an anesthesia



that will exclude all stimuli from the brain and thereby attain anociassociation."

Following this principle, novocain-suprarenin and bromural were selected for operative dentistry and minor oral-surgery; novocain-suprarenin and scopolamine-morphine for major oral-surgery. Scopolamine-morphine diminish traumatic and prevent psychic shock. Post-

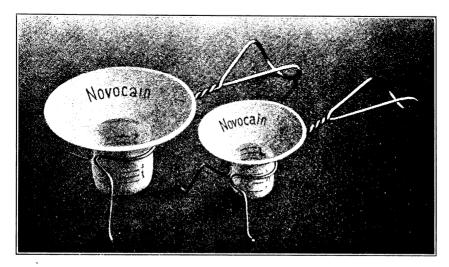


Fig. 1.

operative pain is best controlled by trigemin in minor work and morphine or codeine in major operations; orthoform with iodoform-gauze as a wound-dressing also relieves pain. "Quinine and urea hydrochloride wholly prevents pain if injected into the entire wound. But quinine and urea causes some oedema of the wound; hence one should limit the wound infiltration to cases needing it—e. g., exophthalmic goitre cases—bad risks generally."

Ever since the introduction of cocain for the purpose of producing local anesthesia, quite a number of substitutes have been placed in our hands on account of the drawbacks of cocain.

The classical researches of Braun have established certain factors which are imperative to the value of a local anesthetic. They are:

1st—A lower degree of toxicity than cocain in proportion to its anesthetizing power.

2d—A sufficient solubility in water. The solutions should be stable,



that is, they should keep without deterioration and be capable of sterilization by boiling.

3d—A complete absence of any sign of irritation. There should be no injury to tissues. The local anesthetic should be easily absorbed without causing any after-effects, such as hyperemia, inflammation, or necrosis.

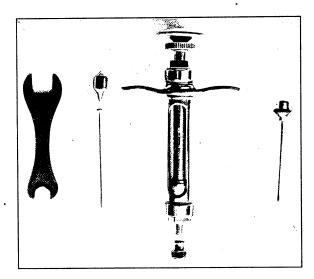


Fig. 2.

4th—Compatibility with suprarenin, the active principle of the suprarenal glands.

Of the many compounds, novocain only is in accord with Professor Braun's postulates. Since the introduction of same, cocain has become entirely obsolete, at least in surgery.

Novocain, while exhibiting the same effect on the peripheral nerves as cocain, is at least seven times less toxic. Employed in normal doses, it affects neither the circulation nor respiration; the cardiac function remains intact.

Novocain dissolves in equal parts of water. The solutions have a neutral reaction, are readily absorbed and may be sterilized by boiling.

Novocain permits the combination with suprarenin without inter-



fering with the vaso-constrictor action of the latter. The addition of suprarenin to novocain prolongs its anesthetic effect.

All fluids injected hypodermically should be isotonic, and, therefore, the 2% novocain solution, the strength ordinarily used, should be made up with 0.6% sodium chloride solution.

The most convenient form for the general practitioner to use in making up sterile solutions is the tablet. Tablets E of the Farbwerke-

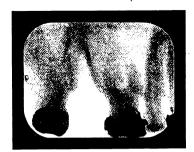


Fig. 3.



Fig. 4.

Hoscht Company contain each 0.02 gram novocain and 0.00005 gram suprarenin. There is now on the market a very convenient help for preparing the solution, namely, a novocain tablet dissolver, made of porcèlain. (Fig. 1.)

A stock solution of 0.06% sodium chloride, in distilled water, is kept on hand. I c.c. of this is brought to the boiling point in the novocain tablet dissolver. To each c.c. of the boiling solution, I tablet is added and boiling continued for a minute or two longer.

At the present time I use only the hypodermic syringe of Freienstein, which holds two c.c. There are only two kinds of needles (after Freienstein) necessary for our work: No. I (0.90 mm. in diameter), 40 mm. long for mandibular injections, and No. I7 (0.47 mm. in diameter), 42 mm. long for all other anesthesias; they are fastened to the syringe by a butt. Needles and syringe must be sterilized in plain water and can be kept in glycerine alcohol solution without rusting (70% alcohol: 700 parts, glycerine 300 parts). (Fig. 2).

Local anesthesia is divided into infiltration (or local) and conductive anesthesia. In infiltration anesthesia we force the solution into the tissues we wish to operate upon, whereas in conductive anesthesia the main nerve supplying the field of operation is blocked at a distant point. We shall consider infiltration (or local) anesthesia first.



### Infiltration Anesthesia.

Infiltration anesthesia can be utilized for all the teeth except the lower molars, because the outer plate of the mandible in their region is very thick and heavy and shows practically no foramina. The

upper jaw on the other hand is very well adapted to this technique; the



Fig. 5.



Fig. 6.



Fig. 7.

bone is more spongy and the inner and outer plate pierced by numerous smaller and larger openings. For a single tooth always inject on the buccal (or labial) and palatal side in the region of the apex—0.75 c.c. and 0.25 c.c. respectively are sufficient—and in a few minutes you can commence to work; but the anesthesia lasts only about half an hour. When a few adjacent teeth are to be extracted, we pierce the soft tissues at the apex of the most interior tooth or root and proceed backward along the bone in a horizontal direction toward the apex of the last tooth to be worked upon, continuously injecting. This method applies only to the buccal side of the upper and lower jaw. The advantage is evident, the mucous membrane is injured only once. In very sensitive patients we

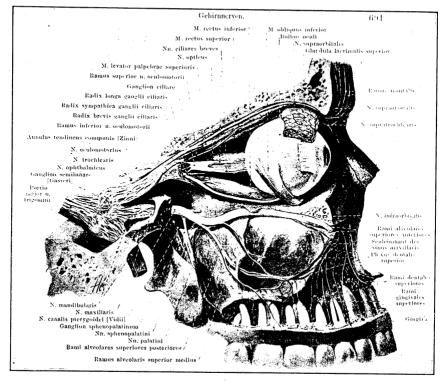


Fig. 8.

run a pledget of cotton saturated with a 20% novocain solution over the mucous membrane, after which the first prick of the needle will not be felt.

A double-rooted upper second molar was painlessly extracted out of a very much thickened alveolus, shown in Fig. 3. With the local injection of 1.5 c.c. of the 2% novocain solution the hidden root of an upper second bicuspid (Fig. 4) was removed. The bloodless field of operation the time at our disposal and co-operation of the patient are a distinct advantage over a general anesthetic, especially in a case of this character.

An oblique fracture of a central incisor is reproduced in the radiograph (Fig. 5). Figs. 6 and 7 show a lateral incisor in the same patient before and after root amputation. In these cases I always insert a piece of cotton saturated with a 20% novocain solution into the nose to anes-



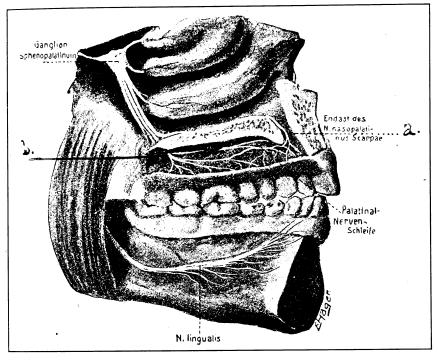


Fig. 9.

thetize the mucous membrane and periosteum of the nasal floor as a supporting measure.

Infiltration anesthesia has but a limited field, which is due to its short duration, the need of repeated punctures of the mucous membrane, and to the fact that it cannot be used in infected areas. The best results are obtained with conductive anesthesia.

Advantages of Conductive
Anesthesia.

The advantages of conductive anesthesia are: (1) its long duration; (2) with one or two injections and less of the anesthetic large areas are anesthetized; (3) the infiltration of infected areas can be avoided; (4) the procedure is even less painful,

because the solution is injected without pressure and into loose tissues.

For conductive anesthesia in the upper jaw two nerve loops must be taken into consideration, the first of which is formed by the three superior dental branches; the posterior, middle and interior superior dental nerves, originating from the superior maxillary and its termination, the infraorbital nerve. The posterior superior dental branches enter the



bone through the posterior dental foramina (foramina alveolaria) at the tuberosity (tuber maxillae); the middle superior springs from the infraorbital nerve in the posterior part of the infraorbital canal, and the interior superior branches just posteriorly to the infraorbital foramen. The above-mentioned nerve loop supplies the bone and all the teeth of the corresponding half jaw, the mucous membrane of the maxillary sinus and the buccal periosteum and gum tissue. The infraorbital nerve



Fig. 10.

—after leaving the foramen—distributes branches to the lower eyelid, the side of the nose and the movable part of the septal cartilage (alae nasi and septum mobile nasi), and skin and mucous membrane of one-half of the upper lip. At the tuberosity are two to three posterior dental foramina at a distance of one to two cm. above the alveolar border. The infraorbital foramen is situated about 7 mm. below the centre of the lower orbital margin (Fig. 8.)

The second nerve loop consists of two branches from the spheno-palatine ganglion, the anterior palatine nerve making its appearance upon the palate through the anterior palatine foramen and the naso-palatine nerve (Scarpa's), coming through the incisive foramen. They supply the hard palate of one side and the soft tissues covering it. The anterior palatine foramen will be one and one-half cm. to the palatal side of the alveolar border of the first, second or third molar, depending upon the age of the patient. The incisive foramen occupies a position 8 mm. behind the alveolar process between the two central incisors in the median line. This opening is very easily reached, because it lies immediately behind the incisive papilla (Fig. 9).



To anesthetize the nerves at the tuberosity, we hold the lip and cheek away with the index finger of the left hand and tell the patient to partly shut his mouth; then we take the syringe with the right hand, pierce the mucous membrane at a point corresponding to the middle of the disto-buccal root of the second molar and proceed in the direction of the apex of the third molar until  $1\frac{1}{2}$  to 2 cm. of the needle disappears; stay in contact with the bone and inject about 1 c.c. In children, and in cases where the third molar has not erupted, always use the last molar and the one next to the last as guides.

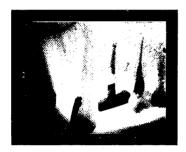






Fig. 12.

In about ten minutes the second and third molars will be anesthized, the first in a large percentage of cases, and they remain so for an hour. But the periosteum and mucous membrane on the palatal side are supplied by the anterior palatine nerve, which must therefore be blocked to insure an absolutely painless operation in this region.

Cechnique for Blocking Anterior Palatine Nerve.

The technique of blocking the anterior palatine nerve at its foramen is as follows: From a point I cm. to the palatal side of the alveolar border of the second molar, direct the needle toward the anterior palatine foramen, which lies one-half cm. mesially

from the alveolar border of the third molar, and inject about five drops. In a few moments the whole palatal side up to and often including the region of the canine tooth is anesthetized. The anesthesia lasts for nearly an hour.

Cuberosity Anesthesia. With tuberosity anesthesia the three molars and even the two bicuspids can be anesthetized if you inject enough of the solution. Braun uses 5 c.c. of a 1% or 2% solution. In a case of acute perice-

mentitis and periostitis originating from a second bicuspid, I performed the extraction painlessly by injecting two c.c. of a 2% novocain solution



at the tuberosity and a few drops at the anterior palatine foramen. As a rule, local injection is used for the removal of bicuspids alone, but this was impossible on account of the acute infection.

Infraorbital
Anesthesia.

Infraorbital anesthesia includes the blocking of the infraorbital nerve at the foramen and the anterior superior dental branches. To effect this, place the index finger of the left hand about one-half

cm. below the middle of the lower orbital margin—the position of the



Fig. 13.

infraorbital foramen—and with it and the thumb of the same hand pull the upper lip forward and upward. We now pierce the mucous membrane at its fold above and distally to the apex of the cuspid tooth and, continuously injecting, drop by drop, aim at the foramen, where we inject I c.c. A little massage will force the solution into the foramen, even if we did not directly get into it.

Very shortly (ten minutes) all the teeth, the buccal mucous membrane and alveolar process, from the cuspid tooth to the central incisor, are anesthetized. In working near the median line it is well to inject locally just beyond this line to eliminate the anastomosis of the other side. The duration is about an hour. The palatal side is innervated by the anterior palatine and naso-palatine nerves, which must be blocked separately.

To remove an infected cyst (Fig. 10) and amputate the apex of an upper cuspid tooth, infraorbital anesthesia and a tampon saturated with 20% novocain solution in the nasal floor were used, also incisive and local anesthesia on the palatal side with good results.

A combination of infraorbital with tuberosity and anterior palatine



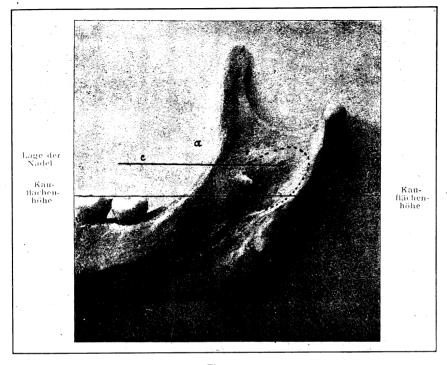


Fig. 14.

anesthesia was employed for the removal of the apices of the two bicuspids, shown in the two following slides (Figs. 11 and 12).

Incisive Anesthesia. Incisive anesthesia is the easiest of the conductive anesthesias. Look for the incisive papilla, pierce its posterior aspect, direct the needle upward and backward into the foramen and inject about

three to five drops. This will anesthetize the anterior portion of the hard palate in the region of the four incisors and posteriorly a little beyond the foramen; the part remains anesthetized about an hour.

Incisive and anterior palatine anesthesia were used for exposing an unerupted canine, which was covered by bone (Fig. 13). Only 0.75 c.c. of the anesthetic was injected, and its effect lasted for the whole time of the operation (half an hour).

Mandibular Anesthesia.

Not only the osteology, but also the anatomy of the soft parts are of great importance for the technique of mandibular anesthesia. Fig. 14 shows the linea obliqua externa (a); linea obliqua interna

(b); position of the needle (c); occlusal plane (d); the punctuated line forms the boundary of the sulcus mandibularis. The trigonum retromolare is well illustrated in Fig. 15, formed by the linea obliqua externa (a), the linea obliqua interna (b), and the last molar. As we will see later on, the most favorable position for injecting is ¾ to i cm. above the occlusal plane of the lower jaw.



Fig. 15.

Following Seidel's example, I prepared a horizontal section of a head (hardened in formalin with the mouth open), 0.87 cm. above the occlusal plane, and not 0.75 cm. as in Seidel's specimen. This specimen is very instructive (Fig. 16): a and b are the external and internal oblique lines, boundaries of the trigonum retromolare; c the ascending ramus of the mandible; d the sulcus mandibularis; between it and the internal pterygoid muscle is the spatium pterygomandibulare, which is made up of connective tissue and through which pass the inferior dental nerve and vessels; e is the lingual nerve. Fig. 17 gives a fairly good idea of the relation of nerve and vessel to each other, and the inner aspect of the ascending ramus and mandibular foramen.

The inferior dental nerve supplies all the teeth of the lower jaw, the bone, periosteum and mucous membrane, except the lingual mucous membrane and periosteum, which is innervated by the lingual nerve. In



Fig. 16. A and b are the external and internal oblique line; c, ascending ramus of mandible; d, sulcus mandibularis, between it and the internal pterygoid muscle; g is the spatinum pterygomandibulare; e is the lingual; f the inferior dental nerve.

197 March



the region below the first or second bicuspid and midway between the lower and alveolar border is situated the mental foramen; through it passes the mental nerve, branch of the inferior dental, to the skin of the chin, also the skin and mucous membrane of the lower lip. At the middle line the inferior dental, mental and lingual nerves of both sides anastomose. In a small percentage of cases the long buccal nerves (nervus buccinatorius) supplies the buccal mucous membrane of the molar region. (Fig. 18.)

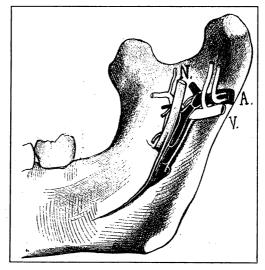


Fig. 17.

Let us say, for example, that we wish to give a mandibular injection on the right side. Have the patient open his mouth; with the index finger of the left hand find the external oblique line. Now place the ball of the same finger over the trigonum retromolare in such a manner that the finger nail touches the internal oblique line; retract this finger slightly, paint the region well with iodine; grasp the syringe (filled with 2 c.c. of the above-mentioned solution and mounted with needle No. 1, 40 mm. long) with your right hand, like a pen, and aim the needle 1 cm. above the occlusal plane of the lower jaw through the soft tissues directly at the internal oblique line; retract the needle somewhat and move it mesially until you find no more resistance to proceed backward, i. e., when you arrive at the mesial aspect of the ascending ramus, and inject about five drops of the solution to anesthetize the lingual nerve; get the point of the needle in contact with the mesial aspect of the ascending ramus by turning the syringe to the opposite side and remain so



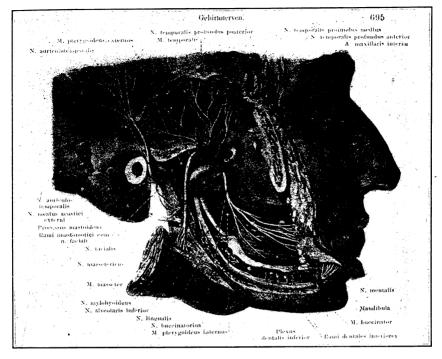


Fig. 18.

while going backward about 2 cm., injecting continuously. Now we arrive at the upper half of the sulcus mandibularis and empty the remainder of the solution: 1½ c.c. Whether we inject directly into the nerve or around it (spatium pterygomandibulare) seems to be immaterial. To inject the left side, use the right hand as a guide and hold the syringe with the left; a little practice will overcome the difficulty of working with the left hand. (Fig. 16.)

In a few minutes, upon questioning, the patient will tell you that his lips and tongue feel numb (swollen, hot, cold, empty, like electricity, without feeling). In almost every case the molars and bicuspids and the cuspid are completely anesthetized in from ten to twenty minutes. This is best tested by compressing the gum tissue at the neck of the tooth you wish to work upon with a pair of pliers. In about twenty-five minutes, if this procedure is still painful, we must inject locally. The anastomoses of the inferior dental, lingual and mental nerves explain why the middle portion of the lower jaw with the incisor teeth are not anesthetized. To obtain complete anesthesia of half of the lower jaw, the mental foramen of the opposite side must be injected. I have found

199 **March** 



Fig. 19.



Fig. 20.



Fig. 21.



Fig. 22.



Fig. 23.



Fig. 24.





Fig. 25.



Fig. 26.



Fig. 27.



Fig. 28.



Fig. 29.



Fig. 30.

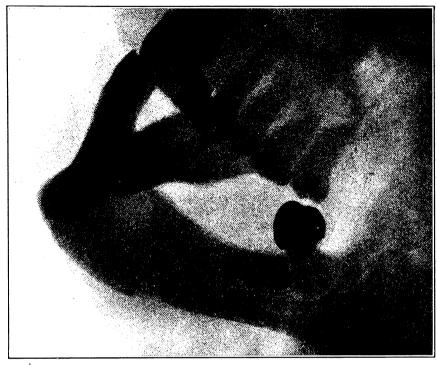


Fig. 31.

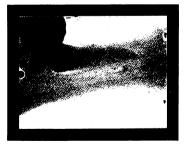


Fig. 32.

Note by the Editor:—Fig. 32 seems reversed, due to fact that in Fig. 31 the photographic plate is placed externally of the jaw, while Fig. 32 is from a film placed at lingual aspect.



mandibular anesthesia to last over two hours (during which time I could operate), and patients have told me that the part remained numb for as long a time as six hours.

The advantages of mandibular anesthesia are: (1) with 2 c.c. of the solution and only one puncture of the mucous membrane the area of six teeth is anesthetized; (2) injection without pressure; (3) the point of injection is far away from the field of operation; and (4) the procedure is less painful than the infiltration method.

The following will ilustrate a few cases in which mandibular anesthesia was successful. The first group (Figs. 19, 20, 21 and 22) shows badly broken-down teeth and roots, which required curetment and careful dressing with iodoform gauze and orthoform. The following illustrate third molar extractions: Figs. 23 and 24 are partly erupted and have infected gum pockets: Fig. 25 is slightly impacted and Fig. 26 is in semi-horizontal position. Two horizontal third molars from the same mandible are seen in Figs. 27 and 28. The patient was given scopolaminmorphine; 45 minutes later a mandibular injection was given on one side, but the last molar was so high in the ramus that local anesthesia was given for the soft tissues above the tooth. After the tooth had been removed and the socket dressed, the other side was anesthetized and the third molar removed; the whole operation was painless and there were no ill-effects from giving both mandibular anesthesias in such quick succession (about 30 minutes), because no muscular tissue was infiltrated. Figs. 20 and 30 show a lower second bicuspid before and after root amputation. A very interesting case is illustrated in the next two plates: An extensive necrosis in the mental region (Fig. 31) and a horizontal unerupted bicuspid, no local injection was necessary, and during and after the operation the patient suffered no pain. The bicuspid is more clearly seen in the smaller radiograph (Fig. 32).

## Mental Anesthesia.

Mental anesthesia is indicated for operations on the two lower bicuspids, and, in case of mandibular injection, to exclude the anastomosis of the opposite side.

Palpate for the mental foramen if possible, or locate its position by slight pressure, which will be painful to the patient on account of the mental nerve being in close contact with the bone at this point. Now pierce the mucous membrane of the jaw near its fold and below the second lower bicuspid, proceed downward and slightly forward (considering the fact that the foramen opens distally) to the middle, between the lower and alveolar border, to strike the foramen; inject continuously a few drops and up to one c.c. at or into the opening. It is very advantageous to hold the syringe in the left hand when injecting on the right



side, and vice versa; the lip is held away with the thumb and index finger of the other hand, placing the thumb as a guide over the foramen. About one-half c.c. injected lingually will anesthetize the mucous membrane and periosteum. The tissues will be numb for nearly an hour.

Mesially to the lower canine we find a shallow depression extending



Fig. 33.



Fig. 34.



Fig. 35.

from the protuberantia mentalis upward to the incisor teeth, the fossa mentalis (fossa canina of Buente and Moral). Near its lower border are situated a number of smaller and larger foramina for the passage of nerves and vessels, the foramina mentalia. Immediately behind them passes the inferior dental nerve. Fig. 15 illustrates the fossa mentalis (F.M.), foramina mentalia (c) and protuberantia mentalis (d).



To reach these openings, puncture with the needle the mucous membrane at its fold below the cuspid tooth, inject a few drops, proceeding slightly mesially and downward to strike the bone below the middle between lower and alveolar border of the mandible, then slide along the bone for a few millimeters, emptying lc.c.; the lingual side must be injected locally. In a few minutes, if both sides are injected, the area of the four incisors will be completely anesthetized, lasting at least half an hour.



Fig. 35.

Fig. 33 shows an unerupted cuspid tooth in a horizontal position which was removed under this anesthesia; the patient had diabetes mellitus, with a high percentage of sugar, and was given bicarbonate of soda for about four or five days previous to the extraction. The anesthesia had no bad after-effects.

Eimitations of Conductive Anesthesia.

Unfortunately, conductive anesthesia has its limitations and contra-indications even for dental operations. The following cases will serve some as examples. The first (Fig. 34) was taken from a patient suffering from an acute pericementitis and

periostitis abscedens originating from the lateral incisor; the patient's cheek and lips were swollen and the eye nearly closed. In Fig. 35 we see a partly erupted thrid molar with distal inclination; the overlying gum tissue and the soft tissues in the vicinity were swollen and pus was oozing from between the gums and about the third and second molars; acute periostitis with a swollen cheek and trismus completed the clinical picture. In both cases local anesthesia was contra-indicated. Fig. 36



was taken from a patient seven years of age, who had a cyst originating from the temporary right upper central incisor root, a rare occurrence. In this case we were compelled to give ether. The patient's age and the doubt as to the extent of the operation excluded the administration of a local anesthetic.

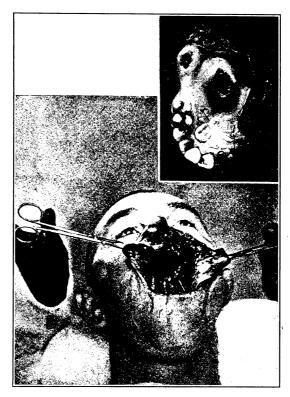


Fig. 37.

Dangers in Cocal Huesthesia. What dangers, if any, accompany local anesthesia? Novocain-suprarenin is absolutely harmless in the small dose sufficient for dental operations. Arteries and veins will not be punctured if the solu-

tion is injected continuously while proceeding with the needle; but even if when it has occurred it has been found to be a harmless accident (Braun). The same holds good for the nerves; some authors even recommend the injection into the nerve and have never seen any bad effect from it. As far as the needles are concerned, I have never broken



one. But never insert the needle into the soft tissue up to the butt, because—according to Braun—they break at this point. In case of such accident the needle can easily be removed.

In employing novocain-suprarenin, the patient's life is not endangered. The anesthesia lasts long enough—especially with conductive anesthesia—to eliminate the first severe post-operative pains. A bad



Fig. 38.

and insufficient local anesthesia is harmless; bad general anesthesia is dangerous. "Local anesthesia, therefore, is the method of choice, if with probability, without using too large a dose of the anesthetic, without any unnecessary preliminaries or any unduly elaborate technique, the whole field of operation, not only part of it, can be rendered insensible, if the operator knows the technique of the method and its limitations and if the psychic state of the patient permits the avoidance of the narcotic sleep." (Braun.) The psychic state is only very rarely a contraindication; even the highly nervous patient is quickly quieted if he sees that he is not hurt. Children who, as a rule, are considered bad subjects



for local anesthesia, make, in my opinion, just as good if not better patients than adults. I can recall but one instance where a patient refused local anesthesia, and then because a previous attempt by another doctor had proved unsuccessful.

A table to which I take pleasure in calling your attention gives the



Fig. 39.

Report of the Oral Surgical Department of the New York Throat, Nose and Lung Hospital for the year ending December 31, 1913. Two hundred and four times local anesthesia (novocain-suprarenin) was employed; only twice a general anesthetic had to be resorted to—somnoform for a case of acute periostitis abscedens and ether for the removal of a large cyst originating from a temporary left central incisor in a boy of seven.

I also show three photographs from Braun's book which were taken during the operations. The first one (Fig. 37) was a resection of the superior maxilla for carcinoma of the hard palate; above is the resected part. A resection of the superior maxilla with removal of the contents of the orbit was performed on the next patient (Fig. 38). In the last picture (Fig. 39) the patient's mandible is divided at the symphysis, the



tongue pulled to the right, a carcinoma of the base of the tongue and of the left tonsil has been excised. If such major surgical operations are performed successfully under local anesthesia with all the benefit to the patient over inhalation anesthesia, this method is certainly indicated for our dental and oral surgery. But we have to know anatomy and pathology, comply with asepsis and acquire the technique of local anesthesia.

# n. y. Chroat, Nose and Lung Hospital

DEPARTMENT OF ORAL SURGERY.

(Dispensary hours: Tuesdays, Thursdays and Saturdays at 2 P. M.

Year 1913—Number of Patients 138; (in January one new patient; in December thirty-five new patients).

	Without Anesthesia	Ethyl chloid Spray	LOCAL ANESTHESIA								
OPERATIONS:			I filtration	CONDUCTIVE I							
				Tuberosity	Ant. palat.	Infraorbital	Foram. mental.	Mental foram.	Mandibular	Somno- form	Ether
249 (Γxtract., necrosis), etc.	62	2	26	38	38	6	3	2	902	1	
2 (major operations)									1		1

A number of incisive anesthesias were given, but recorded under infiltration-anesthesia.

# Bibliography.

- I. George W. Crile: The kinetic theory of shock and its prevention through anoci-association (shockless operation). *The Lancet*, July 5, 1913.
- 2. ——: Shock. The Journal A.M.A., December 6, 1913.
- 3. Heinrich Braun: Die Lokalanaesthesie, Dritte Auflage, Leipzig, 1913.
- 4. Hans Seidel: Neue Hilfsmittel zur Lokalanaesthesie. Deutsche Monatsschrift fuer Zahnheilkunde. Heft 8. Leipzig, 1913.

209 March

<sup>&</sup>lt;sup>2</sup> Six Mandibular anesthesias after Seidel had to be injected buccally.



- 5. Werner Spalteholz: Handatlas der Anatomie des Menschen. Fuenfte Auflage. Leipzig, 1907.
- 6. H. Buente- & H. Moral: Die Leitungsanaesthesie im Ober- und Unterkiefer auf Grund der anatomischen Verhaeltnisse. Berlin, 1910.
- 7. Hans Seidel: Die Mandibularanaesthesie. Anatomisch und klinische Untersuchungen zur Vermeidung ihrer ueblen Folgeerscheinungen. Deutsche Zahnheilkunde in Vortraegen. Heft 28. Leipzig, 1913.
- 8. E. Zuckerkandl: Makroskopische Anatomie (in Scheff's Handbuch der Zahnheilkunde. Wien & Leipzig, 1908).
- 9. Fritz Williger: Zahnaertzliche Chirurgie. Leipzig, 1911.
- 10. Guido Fischer: Die Lokalanaesthesie in der Zahnheilkunde. Berlin, 1911.

Some of the illustrations used in this article have been taken from the above works as follows:

Nos. 37, 38, 39, taken from No. 3.

No. 1, taken from No. 4.

Nos. 8, 18, taken from No. 5.

Nos. 9, 15, taken from No. 6.

No. 14, taken from No. 7.

No. 17, taken from No. 8.

Taken from Dr. A. Kohn.

Nos. 23, 24, taken from Dr. A. G. Asch.





# "Che Importance of Blood-Pressure and Pulse Observations During Dental Anesthesia."

By Francis Ashley Faught, M.D.

. Instructor in Clinical Medicine, Medico-Chirurgical College, Philadelphia.

Read before the Forty-third Annual Convention of the New Jersey State Dentair

Society, July 17, 1913, at Asbury Park, N. J.

It has been the function of the medical and surgical professions from time immemorial to allay suffering and cure disease, and that of the dental profession to treat, restore and fill diseased teeth, and by so doing to cause suffering; at least, that is the popular opinion in regard to such matters. Tradition has been rudely upset. To-day the progressive dental practitioner is enabled by means of the newer technic of anesthetic administration to perform many previously tedious and painful operations without pain. The public at large is not slow in grasping the benefit of this wonderful method. The immediate result is that many dentists, in their haste to take advantage and to reap profits of this new procedure, have already or will soon introduce a gas-oxygen outfit, and proceed with its daily use until their inexperience and lack of knowledge results in catastrophe.

When either a dentist or physician undertakes the administration of an anesthetic for the production of analgesia or general anesthesia in any degree, he is taking human life in his hands, and the public, both lay and professional, assumes that he has acquired special knowledge through study and practice, not only of the accepted methods of anesthesia, but also of physiology, pathology and diagnosis, relating to the

211 March

# Ttems of Interest

heart, circulatory and respiratory systems. Upon these several points I think there can be no argument.

If a dentist intends to enter this new and lucrative field, he is in duty and honor bound to thoroughly familiarize himself with these branches and to acquire a practical knowledge of the methods employed by those who are at present recognized as qualified anesthetists. Any other course will lay the dentist anesthetist open to censure, if not to criminal prosecution, if from his lack of knowledge or his failure to employ the proper methods, he should lose a case.

Before proceeding further, I wish it understood that I am not an anesthetist, and do not pose as one, but that my familiarity and experience with this work comes from a careful study of the methods of others, together with special work in the study of the heart, circulation and respiratory systems.

I do not come here this evening in any spirit of antagonism toward the employment of anesthetics by the dental profession, but rather as one who has been for some time in a position to make a critical study of the methods of anesthesia and an impartial review of the factors leading up to their sudden popularity, and who is at least partially qualified to offer a word of commendation and praise of the results already attained, coupled with a few words of caution as to the future.

It seems to me unfair to expect the student or practitioner of dendistry to occupy this new field, without an opportunity for adequate practice and instruction, and yet this is what the public is rapidly forcing upon you.

You are all thoroughly aware of the trials and tribulations of the medical student, his long course and the now required hospital interneship, in which the opportunity for clinical study, in diagnosis, anesthetics and emergency treatment is almost unlimited; and yet in spite of this, as I have had ample opportunity to see, but few medical students and hospital residents become proficient in the art of anesthetization. It would then appear almost the height of folly for a dental student or practitioner to even attempt to enter this field, jointly with a medical student or practitioner, without the same apprenticeship. Such an opportunity does not exist at the present time, except for the few who have acquired a medical degree, or for those who are willing to take the time for and incur the expense of a special comprehensive course.

Needed Craining of Anesthetists.

Unless more attention is paid to special preliminary training, the recent corps of dental anesthetists who have developed since the demonstration of the practicability of combined anesthesia will, I

fear, encounter more than one avoidable disaster.



The first point which I hope to bring home to you this evening is the absolute importance of adequate training for all anesthetists, whether they be dentists or physicians. Briefly this should comprise: thorough practical knowledge of the anatomy, physiology and pathology of the circulation, together with such methods of diagnosis as are recognized to be of value in safeguarding the application of anesthesia and the anesthetized patient. Also a practical knowledge of the relative safety of the anesthetics employed, the methods of their administration and the usual means by which they may cause death. Further perfection in the technic of anesthetization can only be acquired by constant practice under the guidance of competent instructors.

You will readily appreciate that all individuals do not present the same problems to the anesthetist, and that some may be met who are not satisfactory candidates for general anesthesia. You will also appreciate that some persons may bear one kind of anesthesia better than another. If such be the case, it is evident that the anesthetist should be familiar with these conditions and with the methods which will lead him to arrive at proper conclusions under varying conditions.

We are living in an age of progress. This fact is no more evident than in the medical and allied professions. A single decade has so modified our knowledge and altered methods that those who have not most assiduously kept step with the march of progress are fast being left behind. It is well within the bounds of possibility to state that the introduction of the nitrous-oxide-oxygen-and-ether combination, administered by means of elaborate apparatus, forms an epoch in dentistry and that it is probably the most important advance in this branch of the healing profession that has been made in many years. The employment of special apparatus has raised the standard of anesthesia, which demands special knowledge and practice. When such conditions are fulfilled, the whole procedure becomes one of almost mathematical precision, as compared to the older methods of semi-drowning without thought and without experience. These very facts emphasize most profoundly the logical corollary; that the employment of such a special procedure places those who practice it in a special class. Membership in this class demands special knowledge and experience above the rank and file of the profession; therefore the public should insistently demand that all those who attempt this special work shall possess the special education and training necessary to carry it on successfully.

In other words, if I pose as a specialist, my work in that branch must be better than that of my neighbor, doing the same work occasionally, but who does not pose as a specialist; and if my results as a specialist do not compare favorably with those of men in general prac-

# Items of Interest

tice I open myself to greater censure and greater possible danger of prosecution if unnecessary accidents result.

It may appear an unnecessary repetition, but it seems to me that so many are rushing in to occupy this most attractive and lucrative field that there will be many who will thoughtlessly enter, because of the inducements offered but whose lack of experience will result in unnecessary accidents, which will throw discredit upon this most practical and humane procedure, that too much cannot be said upon this subject at this time

The value of the trained anesthetist cannot be overestimated, for I have seen in our large hospitals that patients receive only the most profunctory preliminary examinations, are laid upon the table and literally drowned by an anesthetic, administered by a recent graduate with no instruction and less experience in the production of anesthesia. The great wonder is that more fatalities do not occur, that permanent damage does not often result, and that those who suffer such barbarism ever regain normal health. I assure you that this statement is not at all overdrawn, for I can show you similar instances at almost any time in any large hospital.

If the present methods of anesthesia, with rare exception, leave so much to be desired, even in medical practice, where anesthesia is often so necessary, how much more careful should the dentist be, who induces analgesia and anesthesia merely as a matter of convenience, sometimes only to allow greater operating speed or to relieve nervous strain in the patients.

# Means for Safe Guarding Patients.

Let us now turn for a few moments to the means available for safeguarding patients before and during analgesia and anesthesia; among them is the use of an instrument of precision which I consider a most essential part of the equipment of

all those employing anesthesia for any purpose whatsoever.

Clinicians and surgeons have recently come to recognize the great value of the sphygmomanometer in determining the condition of the patient's circulation and systems related thereto before, during and after the administration of anesthetics. The popularity of this test has resulted in the production of a large number of apparatus for its performance. Many of these are quite practical and give good results when properly employed. Your essayist's attention was directed to the importance of this test in clinical work about six years ago, and it was his good fortune to be able to make several improvements in both types of apparatus now employed. These I will take pleasure in showing you on the screen before closing.



It being possible that some of you are not familiar with the principle and technic of this test, it may not be out of place to devote a few minutes in explanation of it.

The method of blood-pressure testing can best be explained by likening it to a problem in algebra, in which we seek to find an unknown quantity from several known factors. This problem is a simple equation, containing an unknown factor (the blood-pressure), a variable known factor (the air pressure), and several fixed factors (the remaining parts of the apparatus).

## Sphygmomanometer,

The apparatus for estimating blood-pressure is known as the sphygmomanometer and is composed of a gauge with a millimeter scale for measuring the air pressure; an arm-band which is pneumatic

and which surrounds the arm; a pump for producing air pressure and suitable tubular connections for uniting the whole.

With the apparatus properly arranged upon the arm, as you saw in the demonstration this afternoon, air pressure is raised by means of the pump, until the pressure exerted within the arm-band is sufficient to compress the artery in the arm and so stop the flow of blood to the forearm and hand. This condition is shown by cessation of the radial pulse. We now must have a greater air pressure than blood-pressure. Then if we can, as we do, gradually reduce the air pressure until the first and faintest pulse beat reaches the wrist, the measure of the air pressure at this instant must necessarily equal the blood-pressure. Thus we solve our problem and are enabled by this test to say that the blood-pressure in the case under observation is so many millimeters of mercury.

Time is too short to go into more detail, or to mention the wide applicability of this test in both medicine and surgery. I will therefore confine myself to the subject in hand, namely the value of this simple test to the user of anesthesia producing drugs, both for purposes of analgesia and general anesthesia.

### Use of Sphygmomanometer During Anesthesia.

It is now well known that certain common constitutional diseases produce definite and permanent changes in blood-pressure, and that great alterations in blood-pressure is usually an indication of threatened or approaching danger to life. Thus

high blcod-pressure may be a sign of Bright's disease, of arteriosclerosis, or of heart disease; while sudden or profound alterations in blood-pressure downward is usually a sign of heart weakness or of failing blood-vessel tone, which may terminate in shock and collapse, or even in death, if allowed to continue unchecked. Thus we find in the bloodpressure test a simple and always available means of detecting, before anesthetization, any predisposition to those conditions which the anesthetist has learned most to dread, *i. e.*, apoplexy, uremia, heart failure and collapse, and shock and death.

The value of this test for this purpose is now so well recognized that few surgeons are willing to proceed with the anesthetic or with operative procedures until they are assured of the absence of such tendency and that the patient's circulation is normal.

If the physician and surgeon with their broad medical training so generally use the blood-pressure test, should not the dental surgeon employing anesthetics, with his inadequate knowledge of these matters, be even more careful to avoid unnecessary danger and regularly make this test before producing analgesia and anesthesia?

### Effect of Anesthetics on Blood Pressure.

It is known, furthermore, that different anesthetics cause different reactions. Thus nitrous oxide markedly elevates blood-pressure. This rise is in a measure restrained or inhibited by the administration of a proper percentage of oxygen. Ethyl chloride

and somnoform almost uniformly lower blood-pressure, and the greater the dose of these drugs used the greater the falling pressure. Another valuable feature of this test, therefore, is its aid in the selection of the proper anesthetic. Nitrous oxide and oxygen for the low pressure and normal cases and somnoform or ethyl chloride for the high pressure cases. To follow such a course must undoubtedly increase the patient's factor of safety, and this can only be done by knowledge of his blood-pressure.

Now for a moment consider the value of the blood-pressure observation while the patient is under the influence of the anesthetic. There is much valuable information to be obtained here. During anesthesia a rising pressure, especially if the initial level of pressure is high, is an indication of danger, while under any conditions a falling pressure will show almost before any other sign that the heart is acting less well, or that collapse or shock are imminent.

Gibson, of Edinburgh, has shown that a falling pressure and a rising pulse rate is a danger sign, and that should the pulse in beats per minute rise above the blood-pressure in MM. Hg., it is always serious unless normal relations are quickly re-established; while the converse is equally true.

Before turning to the few slides, made from charts of cases in actual practice, with which I will attempt to demonstrate these fundamentals, I wish to say a final word in favor of this test, based on its simplicity and ease of performance.



It is a simple matter, after a little practice, for an assistant to take and record both the blood-pressure and the pulse (counting one-quarter minute) at intervals of a minute or slightly less. I have done it repeatedly in 45 seconds.

I have purposely said nothing about normal blood-pressure and its variations for three reasons: first, because the time is far too short to begin to cover it; second, because current medical literature and recent works on the subject treat of it so fully, and thirdly, for fear that by so doing I would cloud the issue and fail to make my points, because of the confusion which a mass of detail and figures might cause. It is sufficient to remember that the normal blood-pressure in children is from 90 to 105; in adults, from 105 to 145, advancing slightly with age to say 160, above age 50. The pressure in adult females is usually from 5 to 10 mm. below that of males for the same age. We will now proceed to the illustrated portion of this talk.

(Dr. Faught then illustrated his sphygmomanometer and its use with lantern slides.)

## Discussion of Dr. Faught's Paper.

Dr. Charles S. Cuttle, listen to one of Dr. Faught's essays. They are certainly to the point. And I have noticed that when the doctor has finished the society, whether it be dental or medical, is usually wide awake, having been held up, as it were, by forceful facts, or, as in this instance, having been lashed for carelessness in a serious matter until we see stars. Yet, how terribly true are these facts which this most able essayist has placed before you to-night—true, not only of our own profession, but also of the medical fraternity. Many instances could I cite which make one wonder at the small value placed upon human life by those to whom it is entrusted.

A few months ago Dr. Faught and I read before a society a paper (which was later published in the *Dental Brief*), warning the anesthetist of careless oversights in the administration of anesthetics, and placing before the profession means of safeguarding such administrations. In my own opinion, it is little short of criminal to subject a patient to an anesthetic without such a safeguard when we have with us the proper instrument. Yet, in many offices where now it is the custom to administer an anesthetic for the alleviation of pain several times each day, this instrument for safeguarding the patient's life is absent, and, I fear, in some may never have been heard of. We still have with us offices



in which nitrous oxid and oxygen have been administered for years, and there is nothing at hand excepting forceps and water syringes. Our large ocean liners seldom founder, but when one does, without the proper equipment for safeguarding the lives of those aboard, what a howl goes up from the public! and justly so. It is not difficult to call to mind the *Titanic* disaster and the number of lives which might have been saved had this ship been properly equipped. So with you who are entering the field of anesthesia, provide for danger by having in your possession this instrument which, like the barometer, gives warning. The danger may never present, but being prepared for it is like buying an accident policy—one may never break a leg nor have his hand cut off, but it is a protection and a great comfort.

### Safety Appliances Used During Anesthesia

In my own office I safeguard my patient to the very best of my ability, and it might be worth while to tell you what I have within easy reach when about to administer an anesthetic: A steel mouth pry and

a conical shaped mouth screw made of threaded rubber; to gue forceps, hypodermic syringe, adrenalin and normal salt solution; strychnine tablets, and last, but by no means least, a Faught sphygmomanometer, which is always used before and after the anesthetic is given, and, in as many cases as is possible, during the induction period.

Somnoform.

It seems well to state here that somnoform plays a valuable and important part in my anesthetic work, and is one much to be desired when a

patient presents directly after a hearty meal. You are all aware of what occurs should N<sub>2</sub>O & O be administered in such a case. I have never yet had a case of nausea and vomiting when somnoform was the agent selected. On the other hand, somnoform has a tendency to lower the blood-pressure, and it would not be wise to select this anesthetic where lowered blood-pressure already exists. I am enabled to make my selection between N<sub>2</sub>O & O and somnoform by means of the blood-pressure test before the administration. I have heard several timid practitioners say, "It will frighten my patient to take his blood-pressure." In my practice I have not found this to be true. A few words of assurance and you find the patient not only willing to submit to the test, but appreciative of your care of their safety. I am employing three anesthetic agents in my general practice, and no patient is ever allowed any before first having the pulse and pressure rate recorded. I have yet to meet with a refusal from anyone.

We know from statistics that deaths are rare under somnoform and  $N_2O$  & O, in spite of the fact that I believe they are being adminis-



tered by hundreds of inexperienced and many careless persons. But the near-accidents and nerve-racking incidents which occur in every-day practice, what of them? We do not hear of them and they seem not to be recorded. At least, I have never yet read of any. They are hushed up and kept out of sight. And they may all be prevented by first making use of a sphygmomanometer and listening to the heart with a stethoscope. To corroborate this statement, ascertain if you can how many accidents have been preceded by these simple tests.

Care from Practice.

Present methods of anesthesia do, as Dr. Faught has said, leave much to be desired and in many ways. A case of interest in this sad direction was recently told to me, and is known only to the patient's family

and those present at the operation. The patient, a young lady possessing a fine voice, found it necessary to have her tonsils removed. Her physician employed another medical man to administer ether, and this irritating agent was allowed to flow down the patient's throat. It is presumed that the anesthetist became interested more in the operation than in the administration of the ether. The result? This girl was unable to take solid food for two months and has entirely lost the beautiful voice tones, in fact, even her speaking voice has been thickened. Question: "Is not this anesthetist justly open to criticism?" This also bears out Dr. Faught's statement concerning the untrained anesthetist.

In conclusion allow me to thank you for your attention and Dr. Faught for presenting to us a paper containing so many suggestions of importance just at a time when our profession is particularly interested in this subject. I also want to impress these points upon your minds: Study when possible with one qualified to teach and provide yourself with the latest books upon the subject and safeguard your patient always in the manner so eloquently placed before you to-night by Dr. Faught.

# A Case of Novocain Peridental Anesthesia Followed by Unpleasant Symptoms.

By John S. Marshall, M.D., Sc.D., Captain U. S. Army, Retired.

Read before the Alameda County Dental Society.

It is my pleasure this evening to present to you a few notes under the head of "Incidents of Office Practice." My object in doing this is to place before you by the way of caution, a few facts in relation to a remedy that has been most extensively advertised, particularly by our German confrères, as a safe and reliable substance that can be employed for producing local anesthesia with danger of producing unpleasant constitutional effects so slight as to be practically non-existent; and that toxic effects can only be produced by employing very large doses. That it is superior to cocaine for local anesthesia and much less toxic.

The drug to which I desire to invite your attention is Novocain.

This drug is a synthetic product, discovered by Einhorn in 1905. It is in the form of a white powder and is readily soluble in water in the proportions of I. to I. It crystallizes in alcohol in the form of small needles which will melt at a temperature of 156° C. It dissolves in cold alcohol in the proportions of I to 3°. The solutions do not undergo decomposition at temperatures below 120° C. (Fischer). The local anesthetic effect of novocain is the same as that of cocaine, viz.: it inhibits sensation in the peripheral sensory nerves. It has been claimed to be from six (Prinz.) to seven times less toxic than cocaine (Fischer), hence it has become very popular with dentists and bids fair on this account to supersede cocaine. The addition of suprarenin intensifies the anesthetic action of novocain. After the addition of suprarenin the mixture should not be boiled, as the active principle of suprarenin is rendered negative by the boiling temperature.

Novocain has vaso-dilator properties, but this is controlled by the addition of suprarenin.

Fischer says \* "The general effects after absorption of novocain are hardly noticeable, neither circulation nor respiration being influenced. The heart action is not affected." The writer by reason of a personal experience—as a patient—feels it his duty to dissent from these statements in the interest of scientific accuracy.

Enthusiasm sometimes colors our language beyond the point of absolute accuracy, without any intention upon our part to be in any sense misleading or inaccurate. From the experience about to be related, it would seem clear that the above statement of the author quoted is incor-

<sup>\*</sup>Local Anaesthesia in Dentistry, 1912, p. 41.



rect, misleading and dangerous, as novocain does have a more or less marked constitutional effect upon the respiratory and cardiac centers in certain individuals from doses that are not excessive.

### The Author's Personal Experience with Novocain.

The writer is sixty-seven years old, robust, and in perfect health, except for two molar teeth which have been affected with gouty pericementitis—pyorrhea alveolaris, so-called. These two teeth became affected five years ago while I was on duty at

the Division Hospital in Manila, P. I. These teeth were situated upon the left side of the mouth and both of them second molars. The upper one was vital, the lower one had been devitalized for twenty-two years and had carried a gold shell crown for twenty years.

These teeth were treated for several months in the usual manner, but with little or no benefit. The upper tooth was later devitalized on account of the extreme sensitiveness to thermal changes, the pulp extirpated and the root-canals filled. The teeth have been treated frequently since my return from the Philippine Islands by expert specialists, but suppuration has never been controlled, nor the disease checked. Constitutional treatment, and a restricted diet have made no impression upon the progress of the disease.

On August 12th the lower tooth became very painful during the night, therefore I called upon a professional friend for treatment. Examination revealed a large abscess between the roots at the bifurcation, and what appeared to be a cavity of decay in the distal root which had caused its separation from the crown. When this tooth was treated twenty-two years ago, in opening the canal in the distal root the drill perforated the side of the root at about the middle third. The root canals and the perforation were later filled with oxychloride of zinc. When the tooth was extracted it was discovered that complete resorption of the distal root had taken place.

# Administration of Novocain.

Both of these molar teeth were removed under local anesthesia with the following novocain mixture from tablets manufactured by Parke, Davis & Co.

### HYPODERMATIC TABLETS

Novocain		
Adrenalin	1-1500	
Sodium chloride. C-P	1-8	"

Two tablets were dissolved in 40 minims of distilled water, and injected—by the peridental method—into the tissues around each of these teeth. The extractions were absolutely without pain. Upon the extraction of the left lower second molar, a disto-proximal cavity of decay

was discovered in the first lower molar, beneath a large amalgam filling. Upon removing the filling it was found necessary to extirpate the pulp, which was done after a third injection of two tablets in 40 minims of distilled water. This also was accomplished without pain.

Unpleasant Symptons After Novocain. Following the second injection there was a slight increase in the pulse rate, accompanied by an acceleration of the respirations and full deep breathing of expulsive character. These phenomena passed away in from three to four minutes. Upon

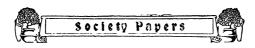
the third injection the same phenomena were repeated and subsided in about the same period of time. All of these operations consumed about one hour. Upon returning to my home I was somewhat fatigued, but had no unpleasant symptoms other than a slight soreness of the mouth in the region of the operations. Ate a fairly good dinner at 6 P.M. At 8 P.M. malaise was quite well marked, accompanied with slight headache and chilly sensations. Drank 2 ounces of whiskey and retired with a hot-water bag at my back. Had a moderate chill lasting about five minutes and a restless night, but no pain.

Rose at 7:30 A.M. Ate a light breakfast at 8 A.M., of fruit and cereals. At 9 A.M. was feeling fairly well except for a sense of malaise, but started on my usual morning walk of two or three miles. When about one-eighth of a mile from home, was seized with a feeling of constriction in the region of heart and forcible breathing—the same feeling that is often experienced by mountain climbers when in high altitudes, and which was once experienced by the writer many years ago when on Pike's Peak in Colorado at an elevation of 14,145 feet.

My pulse beat is normally 68. At this time while on the street it rose to 75. On account of my condition, the outward journey was completed by street car. After being seated for a few minutes the unpleasant symptoms disappeared. The return journey was made on foot, but at a slower pace, with no return of the unpleasant symptoms. The feeling of malaise lasted all that day. The following day I was as well as ever.

Although two grains (0.13 gm.) of novocain was used it is estimated that at least one-half grain (0.03 gm.) was lost from leakage around the loosened teeth, so that these effects were produced by one and one-half grains (0.09 gm.) of the drug. The average dose of the drug is one-half grain (0.03 gm.) (Prinz.) but "6 grains (0.4 gm.) and even 12 grains (0.8 gm.) have been injected, followed with only slight intoxication accompanied by optic disturbances, deafness, loss of energy and headache" (Fischer).

The writer, therefore, received three average doses, in all one and



one-half grains (0.09 gm.) of novocain during a sitting of about one hour, but much less than the maximum dose for subcutaneous injection which is from 6 grains (0.4 gm.) to 12 grains (0.8 gm.).

Precautions Recommended. It would therefore seem wise to modify the statements in relation to the absence of constitutional effects; and the writer would suggest that equal caution should be exercised in the use of novocain

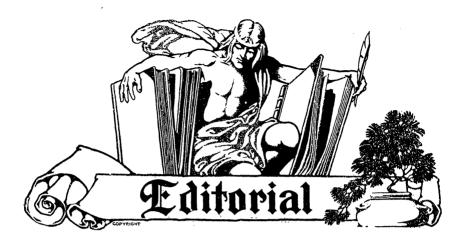
that is employed in the administration of cocaine.

The symptoms, in this case, cannot be attributed to surgical shock as no pain was experienced at any time during the operations. Neither can it be fairly attributed in this case to psychic phenomena, as it might be in an individual with a neurotic temperament. We must, therefore, conclude that the symptoms were produced by the toxic action of the drug. It is possible, of course, that the writer possesses an idiosyncracy against novocain, but this is hardly possible as cocaine, which produces similar physiologic symptoms and which he has taken several times has never produced any unpleasant effects.

It is hardly possible that the strength of the drug was unreliable, as the tablets used were taken from a bottle from which several patients, before and since, have been anesthetized without unpleasant symptoms. These symptoms may have been caused by the adrenalin, but if this drug was the cause they should have been manifested almost at once, or at least before the next day. The principle effects of adrenalin are to accelerate the pulse, increase the blood pressure, and stimulate the vaso-constrictor nerves.

There was no symptomatic indication of an increase in the blood pressure, increase in the pulse rate, nor feeling of mental exaltation or intoxication during the operations nor immediately afterward. An overdose of adrenalin would be likely to cause a sense of fulness in the head and perhaps headache, but neither of these symptoms developed.

The feeling of constriction in the region of the heart, the labored breathing and the increase in the pulse rate, did not develop until some eighteen hours after the injections, while the feeling of malaise did not manifest itself until some five hours after the last injection. The writer is therefore of the opinion that the unpleasant symptoms developed in his case were due to a *cumulative* effect of the drug, and he would suggest that in the future the dose of the drug be not repeated at the same sitting. In the employment of cocaine as a local anesthetic he has never allowed himself to repeat the dose at the same sitting, and to this, in considerable measure, lies the fact that out of several thousands of administrations of cocaine for similar operation, and also for extensive surgical operations upon the face, mouth and jaws, he has never had a case that developed the toxic symptoms of the drug.



# Septic Dentistry.

In August, 1911, Current Literature published an article entitle i, "An English Physician's Denunciation of American Dentistry," the physician being Dr. Hunter. The magazine article did not fairly relate what Dr. Hunter really did say, but the American dentists sounded the tocsins and flew to arms to defend themselves against the charge that septic conditions in the mouth could be traced to American dentistry. All of which was most admirable from the viewpoint of national pride, even though not quite defensible from a standpoint of fact.

An editorial dealing with this controversy appeared in ITEMS OF INTEREST in November, 1911, in which it was pointed out that as long ago as 1901 Dr. Weston A. Price called attention to the radiographic evidence that dentists in this country were not properly treating root canals, with the result that abscessed conditions supervened (ITEMS OF INTEREST, June, 1901, pp. 458-472). Also that Dr. M. L. Rhein had published a similar communication in 1908 (ITEMS OF INTEREST, November, 1908, pp. 833-855). That Prof. I. N. Broomell had warned against placing large masses of gold near to the pulp, indicating the pathic sequellae that might be expected (*Dental Cosmos*, April, 1910, pp. 389-403). And that Dr. Herman E. S. Chayes had published an article illustrating unsanitary bridgework done in this country, under the title,



"Empiricism in Bridgework" (ITEMS OF INTEREST, October, 1910, pp. 154-155).

Comment was made that none of these articles had aroused any protest, nor so far as could be noted had they produced any betterment of conditions.

In this same volume (ITEMS OF INTEREST, May, 1911, pp. 339-351) may be found an article by Dr. Clarence J. Grieves, entitled "Systemic Pus Poisoning Associated With Diseased Dental Apical Regions."

So far as the writer knows, this was the first important utterance by a dentist attributing arthritis to alveolar abscesses. Since that time. however, tremendous masses of evidence have been compiled supporting this view.

The latest lecture on this subject was delivered at the February meeting of the First District Dental Society by Dr. Hartzell, who gave the histories of a number of arthritic lesions attributable to mouth infections. Several physicians were heard in the discussion which followed, the most painful moments for the dental audience arriving when Dr. Byron C. Darling threw upon the screen numerous radiographic records of—let us not say American dentistry, even though it was dentistry done in America, all of which he had diagnosticated as the direct causes of the direct ultimate results—mainly arthritic in character. A few of Dr. Darling's radiographs are reproduced in this issue, grouped together and published as a frontispiece, in the hope that by this means the attention of dentists will be seriously attracted to the great menace that is threatening the fair name of our profession.

Glance at the illustrations. In Fig. 1 we see an extensive piece of bridgework attached to roots, one of which is not filled at all, while the other contains a post, but no apical filling, though, of course, there is an apical abscess. Fig. 2 shows a shell crown, carrying a "swing" placed over a living pulp, perhaps, which promptly died, resulting in an abscess. Fig. 3, also called sanitary or self-cleansing bridge. Note the awful abscess resulting from the septic condition of the unfilled roots. Figs. 4 and 5 are two more specimens of septic bridgework. Figs. 6 7 and 8 are specimens of septic crown work. Crowns placed on roots with the apices unfilled. No dentist with any pride in his profession could have



been present while this medical gentleman exhibited these specimens of gross incompetence without feeling his cheek glow with shame.

But a just feeling of shame at such an exhibition will not suffice. For years the members of the dental profession have been clamoring for recognition by the medical profession. At last we have reached the goal. The medical man is increasingly willing to confer with his dental confrere; to listen to the statements of dentists that the medical man should examine the mouth as a possible portal for the entrance of disease. And, lo! When the medical man at last does make a practice of examining the mouth, he does indeed find the explanation of diseases which heretofore had been unexplainable, and among the causes of these diseases he finds septic conditions which he suspects may be traceable to dental incompetency.

At present, the possibility that arthritis and other diseases may have their origin in septic areas about the roots of filled teeth is scarcely more than a probable hypothesis. But it is not impossible that within a few years cold science will have changed this from a theory to a proven fact. If so, then, in a case of arthritis traced by a physician directly to an improperly filled root canal, there is little doubt but that the dentist who imperfectly filled the root, thus initiating the septic lesion, may be mulcted in heavy damages as a malpractitioner.

This is no fancy flight of the imagination. The relation between unfilled roots and arthritis is becoming closer day by day. An increasing number of physicians when treating this disease are insisting upon radiographic examinations of all teeth carrying large fillings crowns or bridgework. In such manner were the radiographs shown by Dr. Darling brought into existence. They were all in the mouths of persons suffering from joint disease. Let this method of mouth examination by medical men go on but awhile longer, and if the radiographic records continue to be found as Dr. Darling and others report, a stigma will have been placed upon dental practitioners as causers of systemic disease. The only remedy lies in more skillful root canal treatment.



I HAD EXPECTED to meet a few choice spirits in the Grill of the Hotel

- \* Biltmore, New York's new five-million-dollar inn, but none was there.
  - Oh, yes! There were choice spirits there in plenty, but I was not think-
- ing of that kind. But now that you mention that kind of spirits, that
- hotel is so close to the Grand Central Station that they could appro-
- priately hang out a sign reading: "First Chance." That would be a
- novelty in New York, though common enough in Texas.

RETURNING TO OUR MUTTON (it was lamb that I ordered, but mutton

- that was served), when I found the place deserted of my kind, I was
- tempted to abandon the millionaire atmosphere and go over to a Child's
  Restaurant. No! I do not mean a children's restaurant, but a Child's
- restaurant, just as I wrote it, though if I followed the current fashion
- \* here in New York, where everything edible, and much that is not, is
- \* à la Française, I should say Un Café des Enfants.

SS SS SS

HOWEVER, HAVING ordered my chop, I kept my seat and nursed my

- ❖ grouch. A man is so likely to feel that way when dining alone; he is ❖ in such bad company. You are wondering what all this has to do with
- teeth! Well, let me assure you there is no place where one is more
- apt to think about teeth, than in an eating room, especially when one
- orders a chop. Did you ever think backward? Don't know what I
- \* mean? Let me explain. A thought comes into your mind and you
- ponder over it, but did you ever analyze the thought, seeking to trace
   the sequence of preceding thoughts, which had, as it were, brought the
- \* last thought into existence. Try it sometimes. You will find it enter-
- taining.

83 83 83

- I HAD HARDLY bitten into that lamb (mutton) chop when I thought of rubber; in fact, of rubber dam. I had a little lady from Boston once.
  - \* a young miss of some ——— summers; they never say just how many
  - in Boston; they "keep their own statistics." But this little Boston girl



- somewhat abashed me by asking: "Do you use elastic profanity?" For
- a moment I did not know whether to say "Yes," or "No," so I said:
- "Sometimes."

### **X X X**

SINCE THEN it has often occurred to me that the rubber dam can be used

- in such a way, that it would require very elastic profanity if the patient
- \* were to express his (or even her) thoughts, and keep nothing back.
- To revert to my own thoughts, "Why was it that I thought of rubber?"
- I admit that the lamb was mutton, but it was not tough. Tracing back-
- ward I analyzed it thusly: In the first place, the men who had promised
- to dine with me were dentists. Ordinary courtesy compels me to con-
- cede that much. But thinking of them as dentists, led me to think of
- the sort of dentistry that they do; and from that I thought of the sort
- of work that they do not do, but which they ought to do; and it then
- occurred to me that when they do not do the sort of work that they
  - ought to do, that they do their patients. That, of course, is slang, and
- ❖ I never use slang when I am writing, nor when I am speaking. But
- this time I was thinking, and one cannot always edit one's thoughts.

### **X X X**

ARRIVING THUS at the point where I was forced to admit that my dentist

- friends are unjust to their patients when not doing thorough work, I
- grasped the important corrolary, that they also are unjust to themselves.
- ❖ Because as a wiser man than I has said, "Practice makes perfect," or I
- might add with particular application to our specialty: "Practice makes
- perfect work more easy, and thus produces a more perfect practice."
- ❖ Just you digest that, and if your mental metabolism is not faulty you
- should obtain considerable nutriment out of it.

### 85 85 89

THEN CAME another thought. A great many dentists do, or do not do,

- ❖ certain things on the ground that they are considering the comfort of
- their patients, whereas, if the truth were known the real actuating im-
- \* pulse is their own convenience. For example, the man who fills his
- patients' front teeth with white gutta-percha, at five dollars the first
- ❖ year, six dollars the second year, seven dollars the third year, and so
- on as the cavities increase annually in size, tells you that he is practicing
- \* painless dentistry. But I tell you that he is practicing profitable den-
- \* tistry, and the patient gets very little of the profit.

### **X** X X

BESIDES THE GUTTA-PERCHA man, there is the dentist who never

- uses the engine; and the fellow who caps a pulp because it is so painful
- to "kill the nerve"; and who mummifies the "dead nerves, because
- Nature can fill a root canal so much better" than he can. Which, by
- \* the way, is true. And the fellow who--- Just here the waiter brought
- \* me my meal. I cut off a bit of the chop, put it into my mouth, and
- thought of rubber. But, you see, the chop really had nothing to do
- \* with the rubber idea, I being at the Biltmore, and all that.

### **X** X X

THE FACT IS my sequence of thought, and the absence of a particular one

- of my friends, made me think of those fellows who boast that they
- never use the rubber dam. "The patients hate it so!" Wow! Yet a



large number of these non-rubber-dam-dentists (leave out the first two syllables of this compound word if you like, and get even closer to my idea); a large number, I say, have beautiful electric, nickle-plated sterilizers, on nice white-enamel stands. And a girl all in white, to \* bring the sterilized instruments, in a white porcelain-lined tray, over to the clean glass dental bracket, where the dentist himself in white linen ٠ ٠ pajamas, with hands all freshly scrubbed with boiling water and ethereal germicidal soap and dried on a use-and-throw-away-paper-towel, pro-٠ ceeds to undertake a perfectly aseptic operation. And none of this is ٠ kept secret from the patient, either; because the sterilizer is right over ٠ there by the front window, where the light is good; and the girl in ٠ white is a live one, and good to look at; and the dentist himself explains ٠ ٠ that the worst bacteria of them all propagates every twenty minutes, and, consequently, the only safe way is to boil the instruments every ٠ ٠ twenty minutes. Because, don't you see, this keeps the sum total of the bacterial population of that office down to one. And that one poor old streptococcus has been around the place so long that he is perfectly ٠ tame, and warranted not to bite. And there you are! What more could ٠ you ask for in the way of asepsis?

83 83 83

AND THEN that perfectly sterile dentist (en passant, as our French friends say, a sterile dentist is a dentist who is barren of real logical thought); will, whatever he is, he proceeds to operate with all those perfectly clean instruments, and with those perfectly clean hands, in a mouth so filled with bacteria, that if they were only visible, they would make the place look like a public ball room with streptococci, pneumococci, bacillæ, spirrilli, micrococci, spirochætæ and their friends doing tangos and turkey trots all over the gums, tongue, and teeth. And he does this without isolating the field of his operation from all these dangers with the rubber dam. And he boasts of it! And he eschews the rubber dam in the interests of his patients! And he calls himself

a dental surgeon! Surgeon, mind you!

"OH, DAMN!" Like a minister of the Gospel who was recently summoned before his Church Committee because he remarked, "There are things a damned sight worse than dancing"—let me interject the information that when I say "Oh, Damn!" and when I repeat "Oh, Damn!" I do so in a purely biblical sense, and with the hope of planting a seed in the minds of the younger generation of dentists, that may produce a harvest worth garnering.

88 88 88

GRIEVES, HARTZELL, RHEIN and others have taught us the dangers

of infecting the entire system, by permitting abscesses to remain at the

apices of tooth roots. How much more reprehensible, then, must it be

for a dentist to actually cause such a condition! In view of the awaken
ing of the medical profession to this danger which their patients meet

at the hands of dentists, the dentists must be aroused to the gravity

of the situation, and the fundamental and primary dogma should be that

root canal work must be done with every safeguard against either in
fection or reinfection. It is, therefore, obligatory that the tooth upon

229 March



- which the operation is to be performed should be isolated from its sur-
- rounding septic environment. And this can only be done with the
- rubber dam.

### 8

"THIS IS IMPOSSIBLE sometimes," you say. Or, if you do not say it,

- you think it. Anyway, one of my friends said it, and that is why I
- asked him and a few others like him, to meet me that night at the
- Biltmore Grill. I wanted to talk this over with them "Around the
- Table." I wanted them to have a chance to answer back, because I had
- intended to tell them how to do it. But they did not arrive. Even so,
- why should I not tell how to use the rubber dam, where it is impossible
- to use it? I can send them marked copies of this issue of ITEMS OF
- INTEREST, and perhaps when I next ask them to dine with me, they
  - will come, and tell me how to do something. You see, I am a great
- believer in reciprocity.

### 83

I SAID A WHILE BACK that practice makes perfect. I have been using

- the rubber dam wherever possible during all the years of my practice,
- with the result that year by year the impossible cases are fewer and
- fewer in number. Just at the moment the only condition which occurs
- to me, in which I could not apply the dam, is where an erupting tooth
- is carious, though only partly erupted. In such cases it is not common
- to find root canal treatment needed and temporary fillings can be inserted
- until eruption be completed, when the dam may be used and permanent
- work introduced.

### 8 88 80

LET US THEN consider a few of the most difficult cases; conditions in

- which for the sake of sterilization the dam seems obligatory, and yet
- where it seems almost impossible to apply it. I cannot do better than
- to relate the first case in which the solution of this problem occurred
- to me.

### 83

BUT BEFORE I DO THAT let me give notice. It matters nothing to me

- \* if some of you readers have done this "twenty years ago." And I am
- not telling this to claim any credit for solving the problem. If a lot
- of you have done it before, I do not recall having seen it in print, and
- \* it is worth printing. And even if it has been in print, it is worth print-
- . ing again. Perhaps others, like myself, have never heard of nor seen
- \* the method before. So understand, I do not claim that this will be
- \* new to all of you, but I do think it will be new and useful to a number
- of you; and what is of vastly more importance, to a great many patients.

A PATIENT some time ago applied to me with his mouth in a most un-

- \* hygienic condition, and suffering pain in a right lower third molar.
- \* The first and second molars had been extracted. The third molar wore
- a crown, though it was no kingly headgear. A radiograph disclosed
- unfilled root canals, and two "blind" abscesses. Removal of the crown
- \* exposed the fact that a distal cavity, extending well below the gum
- margin, had been crammed (not filled) with gutta-percha. Removal of
- all cement and gutta-percha, left the root with very little of its wall



- standing above the gum margin. The roots were long, and solidly fixed
- in the jaw, and if health could be restored would serve well for a
- bridge abutment. But the mouth was exceedingly wet, tongue active,
- and patient restless.

### **SS** SS SS

THE EXTREME NECESSITIES of the case suggested the remedy. A

- German silver band was fitted around the root with an extension distally
- \* which passed sufficiently below the gum margin to engage the margin
- \* of the root cavity. With cement rather stiff to hasten setting this band
- \* was cemented to place, and held firmly in position till the cement had 
  \* set. Enough cement was removed from within the hand to permit
- set. Enough cement was removed from within the band to permit
   access to the root canals, and with a dressing in place, covered with
- \* gutta-percha, the patient was dismissed. At the next sitting the cement
- had sufficiently hardened to permit the utilization of a clamp and the
- rubber dam. The three root canals were fully explored, the abscesses
- finally cured, and the canals filled, all of which was demonstrated by
- radiographs.

### 83 83 89

ANOTHER ADVANTAGE of this method was that after filling the root

- canals the cement was removed from within the band, to clearly expose
- \* all margins of the root circumference, and without displacing the band,
- it was made to serve as a matrix, and amalgam was packed and anchored
- so as to build up the root properly for the reception of the final gold
- band. Moreover, as summer was approaching the patient was dismissed
- with the band still in place, and it served as a temporary crown for
- four months, by which time all disease had been exterminated. Thus
   was this almost hopeless condition treated and a healthy, firm abutment
- for bridgework saved for the patient.

### SI SI S

SUBSEQUENTLY a variation of this proceedure was thought of. A patient presented with a well-fitting gold crown on a lower first molar. This

- had been made by one of that class of dentists already described, who
- ight hates to hurt a patient. He, therefore, had placed this crown over
- \* a living pulp, which had died, causing an abscess. This crown was re-
- \* moved without slitting the band. A hole was drilled in the side near the cusps of the crown which hole was enlarged sufficiently to receive
- the cusps of the crown, which hole was enlarged sufficiently to receive
   the end of a stout instrument, which, used as a lever, readily pried off
- the crown, thus preserving the band intact. This band was thoroughly
- cleansed, the cusp portion cut away, the edges made smooth, and then
- \* after cleansing all old cement from the tooth root, this band was
- cemented to place, and utilized for simplifying the application of the
- dam, as in the last case.

### **x** x x

THESE TWO EXPERIENCES have established another and more fre-

- quently useful technique in my practice. Very often we have root canal
   work to undertake in teeth, where an approximal cavity has burrowed
- below the gum margin to such an extent, and the mouth is so moist,
- that it seems next to impossible to exclude the mouth fluids with the
- dam. And yet we know that an absolutely dry field is necessary to
- aseptic operation. In such cases I wedge the teeth apart on the un-

23i March



- saffected side of the tooth, to obtain ready access for the fitting of a
- stand. Then with the thinnest of platinoid, which I now prefer to
- German silver, I make a soldered band which passes below the gum
- \* an engages the cavity margin at the carious aspect. This band should
- be nicely burnished to the walls of the tooth, and when cemented to
- place should be further stoned and polished so as to be acceptable to
- the tongue, because occasionally treatment may cover a prolonged
- period.

### 80

THIS METHOD not only permits a perfectly aseptic root operation, but if

- the band be well made and fitted, the gum septum between the teeth
- will recover much more rapidly, than where gutta-percha is packed
- against it continually as in the usual methods. Moreover, when the
- time for filling arrives, and the band is removed, the gum at the cervix
- will stand away sufficiently so that a perfect wax pattern for an inlay
- can be obtained, in which the imprint of the cervical margin will be
- sharply distinct.

THIS SUBJECT of the application of the rubber dam is far from exhausted

- in this brief monologue. But one needs the inspiration of a catechiser.
- Perhaps some of you, who have troubles of your own in connection
- \* with the dam, will dine with me some day and talk it over. Or if you
- are too busy to run over to New York next week, just write me a
- description of a case where it is "impossible to apply the rubber dam,"
- and I will get a few bright chaps to sit with me, and we will talk it
- over "Around the Table."





## Dr. Charles H. Meeker.

Resolutions on the Death of Dr. Charles A. Meeker, D.D.S., Ex-Secretary of the New Jersey State Board of Registration and Examination in Dentistry.

Whereas, In the providence of an All-wise Creator, our fellow-member, Dr. Charles A. Meeker, died September 8, 1913; and

Whereas, His indefatigable industry, his record as an examiner, his skill as an organizer and systematic developer of the New Jersey State Board work for a period of time covering twenty years, have combined to place him without a peer among eminent examiners;

Now, Therefore, Be It Resolved, That we, the members of the New Jersey State Board of Registration and Examination in Dentistry, deeply deplore his loss, and express our great appreciation of his long and intelligent services; and be it further

Resolved, That a page of our Minute Book be inscribed with these resolutions and a copy of the same be sent to his bereaved widow and to the professional journals for publication.

Herbert S. Sutphen, D.D.S., President. Alphonso Irwin D.D.S., Secretary. William E. Truex, D.D.S. Vernon D. Rood, D.D.S. Cornelius Kiel, D.D.S. Chas. P. Tuttle, D.D.S.

# Dr. George Washington Cook.

WHEREAS, The Odontological Society of Chicago is once more called upon to record the death of one of its most eminent members, Dr. George Washington Cook, who died on December 21, 1913; and

WHEREAS, The members of this Society in meeting assembled, fully realizing that a link of inestimable friendship has been suddenly snapped in the affairs of Society relationship; and

Whereas, the Odontological Society in the expression of bereavement must fully recognize that the life of Dr. Cook was one of love and

unceasing devotion to scientific investigation. His numerous contributions to dental literature especially evidenced the mental activity of a well-trained mind.

Therefore, Be It Resolved, That these resolutions be spread upon the records of this Society and that a copy be sent to the family of the deceased and a copy be sent to the various dental journals for publication.

J. E. HINKINS, I. G. REID.

# John Nathan Crouse, D.D.S.

Born September 15, 1842-Died January 16, 1914.

Dr. Crouse was born near Downington, Chester County, Pa. Early education in village schools of Pennsylvania and Illinois; then in Mt. Carroll (Ill.) Seminary, 1859-62. Received D.D.S. degree at Pennsylvania Dental College, Philadelphia, 1867. Began practice of dentistry in Mt. Carroll, Ill., 1864, and since 1868 has been in practice in Chicago. Last surviving charter member of Illinois State Dental Society. Founded Dental Protective Association and was its President until December, 1913. Member of National Dental Association, Chicago Dental Society, Calumet Club. Leaves a widow and son (Dean).

# Dr. E. U. Shadomy.

Dr. E. V. Shadomy, at his home at 2079 Albion Street, Denver, Col., February 4, 1914.

Ds. Shadomy was born at Queensville, Ind., on July 30, 1867, and was a graduate of the Class of '02 of the Colorado College of Dental Surgery, as well as a member of its Faculty. He leaves a wife and one child.

The following resolutions were passed at the regular monthly meeting of the Board of Directors of the Colorado College of Dental Surgery, February 5, 1914:

Resolved, That we, the Board of Directors of the Colorado College of Dental Surgery, feeling deeply the loss we have sustained in the death of Dr. E. V. Shadomy, a graduate of this school and a member of its Faculty, do express our great sorrow; and be it further

Resolved, That this memorial be sent to the bereaved family and a copy spread upon the minutes of this Board and one sent to the dental journals for publication.



# National Society Meetings.

AMERICAN INSTITUTE OF DENTAL TEACHERS, Ann Arbor, Mich., January 28-30, 1915.

NATIONAL DENTAL ASSOCIATION, Rochester, N. Y., July 7, 8, 9, 10, 1914. AMERICAN SOCIETY OF ORTHODONTISTS, Toronto, Can., July 2, 3, 4, 1914. PANAMA-PACIFIC DENTAL CONGRESS, San Francisco, Calif., 1915.

CANADIAN DENTAL ASSOCIATION, Winnipeg, Manitoba, May 26, 27, 28, 29, 1914.

Secretary, Dr. M. H. Garvin, 314 Somerset Blk., Winnipeg, Manitoba, Canada.

# State Society Meetings.

ARKANSAS STATE DENTAL SOCIETY, Little Rock, Ark. Secretary, Dr. C. L. Hunt, Fort Smith, Ark.

CALIFORNIA STATE DENTAL ASSOCIATION AND SOUTHERN CALIFORNIA DENTAL ASSOCIATION, Yosemite Valley, Cal., June 29-30, July 1-2, 1914.

Secretary, Dr. E. E. Evans, Union Savings Bank Bldg., Oakland, Cal. Colorado State Dental Society, Manitou, Colo., June 18-20, 1914. Secretary, Dr. E. W. Spencer, 120 Pope Block, Peblo, Colo.

CONNECTICUT STATE DENTAL ASSOCIATION, Hartford, Conn., April 21-23, 1914.

Secretary, Dr. Arthur V. Prentis, New London, Conn.

FLORIDA STATE DENTAL SOCIETY.

Secretary, Dr. Alice P. Butler, Gainesville, Fla.

Georgia State Dental Society, Atlanta, Ga., June 4-6, 1914. Secretary, Dr. M. M. Forbes, Candler Bldg., Atlanta, Ga.

March

Illinois State Dental Society, Chicago, Ill., March 23-26, 1914. Secretary, Dr. Henry L. Whipple, Quincy, Ill.

INDIANA STATE DENTAL ASSOCIATION, Indianapolis, Ind., May 19-21, 1914.

Secretary, Dr. Otto U. King, Huntington, Ind.

KENTUCKY STATE DENTAL ASSOCIATION, Louisville, Ky., March 9-12, 1914.

Secretary, Dr. Chas. R. Shacklette, Atherton Bldg., Louisville, Ky. Maine Dental Society, Augusta, Me., June 25-27, 1914.

Secretary, Dr. I. E. Pendleton, Lewiston, Me.

MARYLAND STATE DENTAL SOCIETY.

Secretary, Dr. F. W. Drew, 701 N. Howard St., Baltimore, Md.

Massachusetts Dental Society, Boston, Mass., May 7-9, 1914. Secretary, Dr. A. H. St. C. Chase, Everett, Mass.

MICHIGAN STATE DENTAL SOCIETY, Detroit, Mich., April 9-11, 1914. Secretary, Dr. F. Ward Howlett, Jackson, Mich.

MINNESOTA STATE DENTAL ASSOCIATION, Duluth, Minn., August 6-8, 1914.

Secretary, Dr. Benjamin Sandy, Syndicate Bldg., Minneapolis, Minn. Missouri State Dental Association, St. Louis, Mo., April 21-22, 1914. Secretary, Dr. S. C. A. Rubey, Warrensburg, Mo.

MISSISSIPPI DENTAL ASSOCIATION, Vicksburg, Miss., June 23-25, 1914. Secretary, Dr. M. B. Varnado, Osyka, Miss.

Montana State Dental Society, Great Falls, Montana, June, 1914. Secretary, Dr. F. W. Adams, 14-15 Chicago Block, Billings, Montana.

Nebraska State Dental Society, Lincoln, Neb., May 19-21, 1914. Secretary, Dr. H. J. Porter, Cambridge, Neb.

NEW HAMPSHIRE STATE DENTAL SOCIETY, Weirs, N. H., June 17-19, 1914.

Secretary, Dr. Louis I. Moulton, Concord, N. H.

New Jersey State Dental Society, Ocean Grove, N. J., July 15-18, 1914. Secretary, Dr. John C. Forsyth, 430 E. State St., Trenton, N. J.

NEW YORK STATE DENTAL SOCIETY, Albany, N. Y., May 14-16, 1914. Secretary, Dr. A. P. Burkhart, 52 Genesee St., Auburn, N. Y.

North Carolina Dental Society, Hendersonville, N. C., June 24-27, 1914.

Secretary, Dr. J. Martin Fleming, Raleigh, N. C.

Ohio State Dental Society, Columbus, O., December 1-3, 1914. Secretary, Dr. F. R. Chapman, 305 Schultz Bldg., Columbus, O.

OKLAHOMA STATE DENTAL ASSOCIATION, Oklahoma City, Okla., March 30-April 4, 1914.

Secretary, Dr. C. R. Laurence, Enid, Okla.



PENNSYLVANIA STATE DENTAL SOCIETY, Phila., Pa., June 30, July 1-2, 1914.

Secretary, Dr. Luther M. Weaver, Phila., Pa.

TENNESSEE STATE DENTAL ASSOCIATION, Chattanooga, Tenn., June 4-6, 1914.

Secretary, Dr. C. O. Rhea, 6251/2 Church St., Nashville, Tenn.

Texas State Dental Association, Fort Worth, Texas, April 13-17, 1914.

Secretary, Dr. J. G. Fife, Dallas, Texas.

UTAH STATE DENTAL SOCIETY, Logan, Utah, June 19-20, 1914.

Secretary, Dr. I. P. Stewart, 1st Nat. Bank Bldg., Logan, Utah.

VERMONT STATE DENTAL SOCIETY, Rutland, Vt., May 21-23, 1914. Secretary, Dr. P. M. Williams, Rutland, Vt.

WEST VIRGINIA STATE DENTAL SOCIETY, Huntington, W. Va., August 12-14, 1914.

Secretary, Dr. A. C. Plant, 802 Schmulbach Bldg., Wheeling, W. Va. WISCONSIN STATE DENTAL SOCIETY, Fond-du-Lac, Wis., July 14-16, 1914.

Secretary, Dr. O. G. Krause, Wells Bldg., Milwaukee, Wis.

# International Dental Congress—Special Notice to Reporters.

I quote herewith from the Sixth International Dental Congress rules, i. e.:

"Article 18—Reports. In each section a time will be reserved for the discussion of important questions, which have previously been selected by the council of the section, with due regard to the International character of the congress. Each discussion will be introduced by one or more reporters chosen by the council of the section. The manuscript of these reports must be typewritten and must be sent to the office of the congress before April 15th, in order that they may be printed and distributed as soon as possible to all members of the congress who have then been enrolled. The reports will not be read in extenso in the section. Each reporter will be allowed a maximum of 15 minutes for an open resume and 10 minutes for a reply at the end of the discussion. Other speakers taking part in the discussion will be allowed a maximum of five minutes only for their remarks."

Typewritten reports should be addressed to the offices of the congress as follows:

The Hon, General Secretaries.

Sixth International Dental Congress,

19, Hanover Square, London, W.

Will you kindly comply with their request and send your type-written report to them by April 15th, and oblige,

Sincerely, Burton Lee Thorpe, Secretary.

# Complimentary Dinner to Professor Faneuil D. Weisse.

A complimentary dinner to Faneuil D. Weisse, M.D., will be tendered by his friends in the medical and dental professions, to commemorate his completion of fifty years as practitioner and teacher, at the Hotel Astor, Forty-fifth Street and Broadway, Saturday evening, March 28, 1914, at 7 o'clock.

Those desiring to attend will kindly communicate with the secretary at as early a date as possible.

### COMMITTEE

W. W. WALKER, Chairman,

58 West Fiftieth Street, New York City.

HENRY SAGE DUNNING, Secretary,

17 East Thirty-eighth Street, New York City.

J. W. TAYLOR, Treasurer,

106 East Fifty-seventh Street, New York City.

H. W. Gillett, A. R. Starr, A. L. Swift R. Ottolengui, W. B. Dunning, E. Hillyer, H. P. Gould, C. B. Palmer, F. W. Van Saun.

# Examination of Dentists for U. S. Army.

The Surgeon General of the Army announces that examinations for the appointment of Acting Dental Surgeons will be held at Fort Slocum, New York; Columbus Barracks, Ohio; Jefferson Barracks, Missouri; Fort Logan, Colorado, and Fort McDowell, California, on Monday. April 13, 1914.

Application blanks and full information concerning these examinations can be procured by addressing the "Surgeon General, U. S. Army, Washington, D. C."

The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States, shall be between 21 and 27 years of age, a graduate of a dental school legally authorized to confer the degree of D.D.S., and shall be of good moral character and habits.

Acting Dental Surgeons are employed under a three-years' contract, at the rate of \$150 per month. They are entitled to traveling allowances in obeying their first order, in changing stations, and in returning to their homes at termination of service. They also have the privilege of purchasing certain supplies at the Army commissary. After three years' service, if found qualified they are promoted to the grade of dental surgeon with the rank of first lieutenant, and receive thereafter the pay and allowances appertaining to that rank.

In order to perfect all necessary arrangements for the examination, applications must be in the possession of the Surgeon General at least



two weeks before the date of examination. Early attention is therefore enjoined upon all intending applicants. There are at present 28 vacancies to be filled.

## Connecticut State Dental Association.

The Fiftieth Anniversary Meeting of the Connecticut State Dental Association, with Dr. James McManus, of Hartford, the President, will be held in Hartford April 21, 22 and 23, 1914.

Every committee in charge is doing its utmost to make this one of the finest meetings ever held in New England.

The papers will be by Dr. C. N. Johnson, of Chicago; Dr. Charles R. Turner, of Philadelphia; Dr. W. A. White and Dr. Darlington, of New York, and Dr. W. H. Fitzgerald, of Hartford.

The clinics, while not many, are being selected with great care, and only men who have something to show will be there.

The exhibits will surpass anything ever given in Connecticut. A cordial invitation is extended to all ethical men out of the State to be present and learn and enjoy some of the good things with us.

ARTHUR V. PRENTIS, Secretary.

New London, Conn.

# Annual Registration in Indiana, Including Licensees Living in Other States.

The registration of the dentists under the new Indiana law is well under way. The new law calls for the annual registration of all dentists who have ever been registered in Indiana, whether they are practicing in the State or not, if they wish to retain the right to practice at any future time.

Section 9 provides as the penalty for failure to renew within a period of three months after December 31st of each year the cancellation of said license. Provided, that any license thus cancelled may be restored by the board upon payment of a fee of \$5, if paid within one year after such cancellation. There is no provision for the restoration of a license thus cancelled after a period of one year.

Dentists thus eligible to register should immediately send for application blanks to

F. R. Henshaw, Secretary and Treasurer.

507-8 Pythian Bldg., Indianapolis, Ind.

## American Institute of Bental Ceachers.

At the annual meeting of the Institute of Dental Pedagogics, held at Buffalo, January 27, 28 and 29, 1914, the name of the organization was changed to American Institute of Dental Teachers. The following officers were elected for the ensuing year: President, Fred W. Gethro, Chicago, Ill.; Vice-President, H. M. Seman, Columbus, Ohio; Secretary-Treasurer, John F. Biddle, 517 Arch Street, N. S., Pittsburgh, Pa.; Executive Board, Shirley W. Bowles, Washington, D. C.; A. W. Thornton, Montreal, Canada; R. W. Bunting, Ann Arbor, Michigan.

The next annual meeting will be held at Ann Arbor, Michigan, January 28, 29 and 30, 1915.

J. F. BIDDLE, Secretary.

# Chicago Dental Society.

At the annual meeting of the Chicago Dental Society, held December 16, 1913, the following officers were elected for the ensuing year: President, T. L. Grisamore; Vice-President, F. B. Moorehead; Secretary, P. B. D. Idler; Treasurer, R. E. MacBoyle; Librarian, E. D. Coolidge; two members of the Board of Directors, J. P. Buckley and G. C. Poundstone; Board of Censors, T. A. Broadbent, L. H. Arnold and Ashley M. Hewett.

T. L. Grisamore, Secretary.

# Meeting and Post-graduated Course of the Oklahoma State Dental Association.

The next meeting and third annual post-graduate course of the Oklahoma State Dental Association will be held in Oklahoma City, March 30-April 4, 1914. Drs. Jos. B. Eby and Thos. P. Hinman, of Atlanta, Ga., are to be the lecturers.

An important feature of the course will be a progressive clinic, conducted two afternoons of the week by noted clinicians from out of the State.

C. R. LAURENCE, Secretary.

Enid, Okla.

# Cake Erie Dental Association.

The Fifty-first Annual Meeting of the Lake Erie Dental Association will be held May 21, 22 and 23, 1914, at Hotel Bartlett, Cambridge Springs, Pa.

Dr. C. L. MEAD, Secretary.

Union City, Pa.